DOCUMENT RESUME

ED 331 967 CE 057 855

AUTHOR	Granger, Daniel, Ed.; And Others
TITLE	Golden Hill, Volume Four Education Issue .
INSTITUTION	State Univ. of New York, Saratoga Springs. Empire State Coll.
PUB DATE	88
NOTE	170p.; For a related volume, see CE 057 856.
AVAILABLE FROM	Empire State College Distribution Center, 5 Grande Blvd., Saratoga Springs, NY 12866 ($12.00).
PUB TYPE	Collected Works - Serials (022)
JOURNAL CIT	Golden Hill; v4 1988
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Adult Students; Creativity; Educational Environment; *Educational Innovation; Higher Education; *Individual Instruction; Individualized Instruction; *Individual Needs; Instructional Innovation; Mathematics Skills; *Mentors; *Nontraditional Education; Teacher Student Relationship; Teaching Methods; Womens Education
IDENTIFIERS	*State University of New York Empire State Coll

ABSTRACT

The 10 articles in this issue focus on educating the individual student and on the implications for Empire State College (New York) faculty and instructional resources. "Fulfilling Democracy's Promise through Education: The Empire State College Experiment" (Timothy Lehmann) traces the developmental history of U.S. higher education within the context of Jeffersonian democracy. "Kris: An Education in Progress" (Lee Herman) exemplifies the need for flexibility, variety, and diversity in the education of a single student. "Twelve Years in the Life: Learning/Teaching/Learning" (James Robinson) explores the implications of the complexity of the experiences, expectations, and habits students bring with them in terms of the challenges they offer the faculty mentor. Two poems, "Contract Conclusion" and "Slipping Up on the Creative Process" (Kathleen Eckett), explore a student's experience studying poetry and the creative process. "The Education of Artists without Classrooms" (Sharon Villines) investigates new ways of working with students that lead to and support new conceptions of preparing students to be artists. "Finding Yourself at Forty: Autobiographies for Adults" (Sarah Gallagher) charts a way for educators to encourage students to understand themselves. "Women Learners in a Nontraditional Learning Environment" (Paula Mayhew, Lois Muzio) makes a case for the advantages of a learning context fully sensitive to women students. "Mathematics as a Basic Skill" (Xenia Coulter et al.) demonstrates ways to teach math skills within the context and expectations of various disciplines. "To Search for Our Ground(s): Technocracy, Contemporary Thinking, and the Computer" (Alan Mandell) explores a theoretical basis for concern about a growing "technocratic" mindset. "Afterword" (James Hall) concludes this issue with a discussion of Empire State's educational innovations. (YLB)

ED331967

coulter
eckett
gallagher
granger

GOLDEN HILL

hall
berman
lawrence
lehmann
mandell
mayhew
muzio
robinson
villines
woods

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)

☑ This document has been reproduced as received from the person or organization originating it.

☐ Minor changes have been made to improve reproduction quality.

- Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

"PERMISSION TO REPRODUCE THIS MATERIAL IN MICROFICHE ONLY HAS BEEN GRANTED BY

T Lehmann

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

CE057855

Empire State College *State University of New York*

BEST COPY AVAILABLE

Volume Four

GOLDEN HILL

Editorial Board:
Gary Goss
Editor
Xenia Coulter
Wendy Goulston
Susan Hallgarth
Lee Herman
David Porter

Education Issue Editor: *Daniel Granger*

The name of the Empire State College journal, *Golden Hill,* comes from what some call the very first battle of the American revolution (and others have called a drunken street brawl) — on Golden Hill in New York City. The ambiguities surrounding this conflict set the tone for our publication. Neither a formal journal nor a throw-away periodical, *Golden Hill* breaks new ground in at times unorthodox ways.

A NOTE TO READERS

This issue is the result of the collective effort of faculty and staff at Empire State College. Thanks are due to the Editorial Board, especially to Susan Hallgarth, and to the numerous readers who contributed their time and expertise; also to the College administration and the College Foundation for their consistent support and encouragement and to the College print shop for their patience and careful handling. It has been a pleasure to work with such colleagues.

DG

Copyright © 1988 by Empire State College
State University of New York

Printed and published by Empire State College
Saratoga Springs, New York 12866

Contents

Daniel Granger	From the Editor	1
Timothy Lehmann	Fulfilling Democracy's Promise Through Education: The Empire State College Experiment	5
Lee Herman	Kris: An Education in Progress	45
James Robinson	Twelve Years in the Life: Learning/Teaching/Learning	53
Kathleen Eckett	POEMS	
	Contract Conclusion	65
	Slipping Up on the Creative Process	68
Sharon Villines	The Education of Artists Without Classrooms	73
Sarah Gallagher	Finding Yourself at Forty: Autobiographies for Adults	81
Paula Mayhew *Lois Muzio*	Women Learners in a Non-Traditional Learning Environment	91
Xenia Coulter *Louvan Woods* *Betty Hurley-Lawrence*	Mathematics as a Basic Skill	101
Alan Mandell	To Search for our Ground(s): Technocracy, Contemporary Thinking, and the Computer	131
James Hall	Afterword	159

***Daniel Granger** is the Director of the Center for Distance Learning at Empire State College. As a doctoral student at Indiana University he served as a managing editor of the journal* Victorian Studies *and coordinating editor of the Indiana cultural magazine* Indiana Writes. *He is now interested in innovative directions in Amerian higher education.*

Learning at Empire State College

In early 1971, when Empire State College was being planned, the "Prospectus for a New University College" made clear that the central focus of this educational experiment would be on "the individual student learning at his own pace with the guidance and counseling of master teachers." That emphasis has provided the informing spirit of the practice at Empire State. In this special issue of the College's journal, practitioners at the College reflect collectively on their experience in order to share it with the larger educational community.

There was a time when such a volume would require a full explanatory preamble, but no longer. Innovative educators are now quite familiar with terms and notions common to Empire State practice such as "mentor," to identify the particular role of the faculty at the College, as well as "learning contract," "experiential learning," and "individualized degree program." The articles in this issue focus on educating the individual student and on the implications that has for faculty and instructional resources. These articles begin with a focus on Empire State College's history and practice, gradually widening their scope to common concerns of practice and conception in higher education.

Timothy Lehmann's article on education and democracy and Alan Mandell's article on contemporary technocratic thinking provide conceptual anchors to frame the issue. Running counter to conservative calls for core curricula, Tim Lehmann traces the developmental history of American higher education within the context of Jeffersonian democracy. Alan Mandell explores a theoretical basis for concern about a growing "technocratic" mindset, reminding us that attempts to quantify and categorize all aspects of academic performance may hold for educators and our culture an attraction that is fatal.

Students, especially adult students, frequently confound rigid categories by bringing with them experiences, expectations, and habits — a whole bag of skills, knowledge, concerns, and learning needs — that require flexibility, variety, and diversity in educational responses. Lee Herman's article exemplifies and particularizes that need in the education of a single student, and James Robinson's essay explores the implications of that complexity in terms of the challenges it offers the faculty ment[illegible] Sarah Gallagher's essay on student autobiographies charts a way for educators to encourage students to understand for themselves what Jane Loevinger called "the complexity and multifaceted character of real people and real situations." Paula Mayhew and Lois Muzio, in "Women Learners in a Non-Traditional Learning Environment," make a case for the advantages of a learning context fully sensitive to women students — and in so doing, identify ways an individualized approach serves as an effective alternative to a more formal mode which may constrain any student. And as if to confirm the slipperiness of the learning process, writing mentor Wendy Goulston offers as examples two poems by her student Kathleen Eckett.

Robinson notes in his essay that mentors respond to these student-centered concerns on a daily basis, but mentors are also academics with a grounding in a particular field. His essay, as well as those by Sharon Villines and Paula Mayhew and Lois Muzio, explore both the tensions and the creative possibilities available to a faculty where the institution's organizing structure does not include such traditional features as academic departments, departmental majors and minors, or even semester calendars. Under these conditions, as reflected here in the essay by Coulter, Woods, and Lawrence, a psychologist, mathematician, and physicist may join forces not only to make a case for teaching math skills across the disciplines, but to demonstrate ways this can be done within the context and expectations of the disciplines themselves. And Sharon Villines, a practicing artist, explores new *ways* of working with students which lead to and support new *conceptions* of preparing students to be artists.

By focusing on the connections between the individual student and the environment for his or her learning, each of these articles reflects Empire State's unique approach and educational mission. Learning connections can be made between individual students' studies and their larger context of application — whether the immediate community or our broadest cultural values and expectations. Educators like Ernest Boyer, Alexander Astin, Zelda Gamson, Parker Palmer, and K. Patricia Cross have written extensively about the importance of actively and fully *engaging* students with their own education. The essays in this volume suggest ways this may be accomplished and underscore its importance to education and our society.

Timothy Lehmann *is Assistant Vice President of the Office of Research and Evaluation at Empire State College. Since 1980, he has been responsible for conducting studies of adult learners, graduates, leavers, faculty, special college programs and related costs. With a Ph.D. in sociology from the University of California at Berkeley, Lehmann has taught at Ohio State University, Chabot Community College, University of California at Berkeley, Colorado State University, and Empire State College. His current research interests are in adult learning, adult development, program evaluation, and the sociology of education. He is currently engaged in the development of The National Center On Adult Learning sponsored by Empire State College.*

Timothy Lehmann

Fulfilling Democracy's Promise Through Education: The Empire State College Experiment

> I know no safe depository of the ultimate powers of society but the people themselves; and if we think them not enlightened enough to exercise their control with wholesome direction, the remedy is not to take it from them, but to inform their discretion by education.
>
> — Thomas Jefferson

American society and American higher education have long responded to the Jeffersonian call for enlightened citizenship. Democratization of higher education — the process whereby new social groups demand access to and are accommodated by the academy — has proceeded on a scale and at a pace unparalleled in the history of industrialized societies. American higher education has clearly been responsive to the cultural, economic, political, and social forces at work in society. As it has moved from an elite to a mass to a nearly universal system, it has responded with many new educational functions to serve an increasingly diverse set of social groups and "new students." This responsiveness, this open-ended effort to democratize American higher education, is both a great strength and a cause of great concern about education in this country. In focusing on the process of democratization in higher education and particularly on the efforts of Empire State College, this essay will describe the creative and dynamic conjunction of the highest goals of democratic culture and higher education's responsiveness.

I. From Elite to Mass to Universal Higher Education

> Amongst the novel objects that attracted my attention . . . in the United States, nothing struck me more forcibly than the general equality of condition among the people . . .. The more I advanced in my study of American society, the more I perceived that the equality of condition is the fundamential fact from which all others seem to be derived . . .
>
> - Tocqueville (1835)

According to Henry Steele Commager, sometime during the 18th century a distinctively American theory of man, education, and society emerged. In contrast to the European view of human nature as corrupt but stable, Americans saw man as a creature of circumstances. In this context, education was to be a major instrument of change.

> In the broad sense the schools were to be the chief instruments for change in the New World, change in man and change in society. They were to be the chief instruments for the growth of democracy, equality, and freedom, and of morality as well. Schools were the chief instrument for the regeneration of the human race (1966, p. 5).

Since the eighteenth century, Americans have developed very high expectations about what education can do. Believing that talent is evenly and, on the whole, generously distributed throughout the population, Americans assume that talent is not given and fixed, but can be discovered, encouraged, and developed (Rudolph, 1962; Brubacher and Rudy, 1968). After World War II, with the advent of inexpensive and convenient colleges, a college education increasingly became an expectation, both for gains in income, prestige, and social mobility and for fuller participation in a democratic society. Thus parents were "much more likely to encourage their children to go on to college, as a part of the natural' progressive improvement in living standards across the generations that is so deeply a part of American values" (Trow, 1962, p. 240).

In the late 1960's and the early 1970's, the Carnegie Commission on Higher Education issued a series of policy reports setting forth action agendas for equal opportunity. Calling for new levels of federal responsibility and the removal of existing financial barriers for all youth, the Carnegie Commission advocated a "Civilian Bill of Educational Rights" as a significant step forward in the universalization of American higher education (1968, 1970). In its 1970 report, *A Chance to Learn*, the Carnegie Commission argued that "all remaining barriers to equality of educational opportunity . . . be removed so that ability, motivation, and individual choice are the only determinants of college attendance. By the year 2000, ethnic origin, geographic location, age, and quality of prior schooling should no longer stand in the way of access to higher education and success within it" (Carnegie Commission, 1970, p. 4).

II. Access

At the turn of the century, American higher education was a privilege for the elite groups in society. As the figures in Table 1 reveal, only 4 percent of the 18-21 year old group attended college, even though this small proportion represented 237,000 students. By the outbreak of World War II, American higher education had moved from an elite to a mass system, encompassing a million and a half students representing 15% of the college-age group in over 1700 colleges with almost 150,000 professional staff. After World War II, American higher education was transformed again, moving from a mass to a nearly universal system. In the forty-year period from 1946 to 1986, student enrollments increased six-fold; the number of institutions almost doubled to 3300; the proportion of 18-21 year olds in college tripled to over 51%; and the number of professional staff more than tripled.

Since World War II, more than ten million students have been accommodated by the American system, representing all social classes and almost all social groups and geographical areas in the nation. During the 1960's and 1970's, for example, more than 1100 colleges were established, *averaging one new opening every week for 20 years*. By the 1980's, the United States had created the world's first system of extensive mass higher education.

TABLE I
Selected Facts Depicting the Character of American Higher Education, Post Civil War to 1986

Years	*Fall Enrollment*	*Per Cent 18-21 Year Olds in College*	*Per Cent of Students Attending Public Institutions*	*Number of Graduate Students*	*Total Number of Institutions*	*Number of Professional Staff*	*Higher Education Expenditure*
1869-70	52,000	2	NA	NA	563	5,500	NA
1889-90	156,000	3	NA	2,400	998	15,800	NA
1899-00	237,000	4	39	5,800	977	23,900	NA
1909-10	355,000	5	NA	9,200	951	36,480	NA
1919-20	597,000	8	NA	15,600	1,041	48,600	199
1929-30	1,100,000	12	49	47,600	1,409	82,400	508
1939-40	1,494,000	15	53	105,700	1,708	148,000	679
1945-46	2,078,000	NA	49	NA	1,851	NA	NA
1949-50	2,659,000	30	50	237,000	1,858	249,000	2,246
1959-60	3,402,000	34	59	356,000	2,028	282,000	5,601
1969-70	8,581,000	49	74	1,031,000	2,551	546,000	21,043
1979-80	11,570,000	51	78	1,309,000	3,190	823,000	64,053
1985-86	12,174,000	51	78	1,469,000	3,300	824,000	80,000

Sources: American Council on Education, *A Fact Book on Higher Education*. Washington, D.C.: 1969, 1984; Office of Educational Research and Improvement, *Digest of Educational Statistics 1987*. Center for Educational Statistics, 1987, Table 138; and National Center for Educational Statistics, *Digest of Educational Statistics*, 1976, Tables 83 and 84. For specific definitions and for changes in the way data have been collected and reported see the footnotes to the 1984 *Fact Book*, Tables 50, 51, 56, 57, 59, 110, 114 and the *Digest* footnotes. NA = data not available for that year. Higher Education Expenditures are in millions of dollars.

Viewed historically, increasing access to American higher education has been a dramatic and remarkable part of realizing the American dream of a college education for everyone. Looking again at the figures in Table 1, it is clear that, for each succeeding historical period (Post-Civil War, 1865-1900, the Progressive Era, 1900-1940, and the post-World War II period, 1946-1986), enrollments quadrupled, the proportion of the 18-21 year old age group in college tripled, the number of new institutions doubled, and the number of professional staff mushroomed. This continual growth underscores the successful adaptability of American higher education as a critical social institution (B. Clark, 1961).

By comparison to European nations, America has long held the lead in enrolling high proportions of the traditional college age population. European higher education has only recently expanded from elite to the beginnings of a mass system. Citing enrollment figures from 1960 to 1980 for Sweden, France, Denmark and England, Trow shows that these nations have reached the 15-20% level of the college-age group. Trow considers this level to be the minimum for a system to be defined as mass higher education (Trow, 1974, p. 61; 1978, 1981; see also B. Clark, 1983). American colleges enrolled this proportion of the age group more than 45 years ago, prior to the beginning of World War II (see Table 1).

As impressive as these numbers of new students are, however, it is important to keep in mind that they reflect not only a cultural commitment to increasing educational access, but also new economic, political, and social conceptions of higher education.

Recognizing Higher Education as an Economic Resource and Investment

In the post-Sputnik era, America's perspective on higher education increasingly has shifted from viewing it as a vital cultural factor to seeing it as a critical economic and technological resource (Denison, 1962; Schultz, 1968). This "investment orientation" focuses on the relation between the "resources utilized to form human competencies (resource costs of education) and the increments to productivity that result" (Bowman, 1966, pp. 111-112). This view assesses the cost/benefits of education from the standpoint of the individual, the educational system, or the larger society. As Weisbrod has argued, "education produces a labor force that is more skilled, more adaptable to the needs of a changing economy, and more likely to develop the imaginative ideas, techniques and products which are critical to the processes of economic expansion and social adaption to change" (Weisbrod, 1966, p. 325). Recognition of higher education's immediate as well as long-term investment value reinforces the impetus to provide access to those individuals and social groups hitherto precluded from contributing to the process of economic growth.

At the same time, higher education's role in a "knowledge society," one in which the economic emphasis has shifted from a concern with the production of goods to the production and application of knowledge, is self-evident. Links have been forged and strengthened between the academy and the larger society, corporate as well as public, for the creation and distribution of knowledge which directly fosters conceptual, technological, and economic growth (Cleveland, 1985; Lane, 1966; Machlup, 1962). A new form of higher education organization has developed in response to new demands and the constant needs of evolving technologies. In many ways, the exploration, development, and application of theoretical knowledge through the multiversity — a process of "knowledge creation" — is a major driving force behind modern industrial economy.

The professionalization of many occupations as well as the creation of new ones has meant that a higher level of technical expertise and periodic retraining are required if individuals are to remain competent in their jobs. Training and development alone is an enormous industry within the corporate world, but higher education increasingly is recognizing the importance of its role in this area. University adult education and continuing education programs have for many years served the retraining and job-upgrading needs of many seeking to improve their occupational capacities. By now the distinction between "education" and "training" has become so permeable that at least one researcher has argued that it is meaningless (Eurich, 1985). Countless campus programs have behaved accordingly, offering traditional "liberal learning" alongside of, or in relation to, practical technical or theoretical applications. So frequently is applied contextual understanding essential to abstract or theoretical study that a number of innovative campuses are forming "learning communities" in order to replicate a context for understanding and application (Gamson, 1984).

Education, then, has become the major institutional mediator between manpower demand and supply. Advanced education not only offers competence and qualification, both technically and managerially, but higher education maintains almost a monopoly over the training and supply of high caliber personnel, certifying as it does the skill levels of scientists, engineers, teachers, and many technologists.

The emphasis on the production of higher caliber manpower as the goal of higher education has not been embraced without question by the educational enterprise. Many educators decry the apparent emphasis on narrow vocationalism and the effect of that emphasis on the academy itself. Concern too has been raised about the broader effects of the "multiversity" mentality on the character of undergraduate education as well as on the value and coherence of a baccalaureate degree (Wolff, 1969; Freeman, 1976; AAC, 1985).

III. Student Diversity

Who are the students being prepared by this educational system? How do their characteristics affect the evolution of that system? Following World War II, the G.I. Bill provided the opportunity and financial support for millions of returning veterans to obtain an education. This was only the beginning of a new student profile, in this case differing by age and experience, in the undergraduate population. Since then, American higher education has opened its doors to a seemingly endless series of "new students," differing by virtually every conceivable cultural and personal characteristic. In the 1946-1986 period, "new" students included in significant numbers: minorities, women, those from lower middle class and working class backgrounds, low initial ability and disadvantaged students, corporate managers and union members, the handicapped, disabled and home-bound, numerous working adults pursuing education for career change or advancement, new immigrants from Asia, South America, and the Middle East, as well as a host of other "special interest" groups seeking education to improve their economic or social position or to maintain their own special values (for example, in 1985, 66 denominations supported 786 colleges enrolling more than a million students [*Chronicle of Higher Education*, 8/12/87, p. 2]).

These students are diverse in their educational purposes, their background characteristics, their personal work and life experiences and perceptions, their attitudes, values, and motivations for learning, and their special abilities and capacities to contribute to the workforce and society at large. Such "diversity" is a key for understanding the democratization process: serving diverse students means that colleges must make whatever adjustments necessary to accommodate them — academic and pedagogic as well as administrative.

IV. Institutional Responses

In response to the demands of America's "investment orientation" to education, of our emerging "knowledge society," and of diverse student populations, American higher education has reconfigured itself — at times fairly dramatically (Palola, Lehmann, and Bleschle, 1970). Although many older institutions, both public and private, have enlarged their missions, expanded their curricula, and broadened their admissions criteria to become multi-purpose comprehensive institutions, three distinct new institutional forms have emerged: the multiversity, the community college, and the external degree institution.

The Multiversity

In 1963, Clark Kerr described a new form of higher education organization called the multiversity, which contrasts with the university in being an institution with multiple and conflicting purposes, serving a host of constituencies, and having several centers of power and multiple sources of financial support. He explained to us its significance to the knowledge society of the future.

> Knowledge has certainly never in history been so central to the conduct of an entire society. What the railroads did for the second half of the last century and the automobile did for the first half of this century may be done for the second half of this century by the knowledge industry; that is, to serve as a focal point of national growth. And the university is at the center of the knowledge process (Kerr, 1963, p. 88).

A few years later Daniel Bell clarified the distinctive contribution of higher education to this knowledge process and identified the special importance of theoretical knowledge.

> The ganglion of the post-industrial society is knowledge.... In the post-industrial society, what is crucial is not just a shift from property or political position to knowledge as the new base of power, but a change in the character of knowledge itself. What has become decisive for society is the new centrality of theoretical knowledge, the primacy of theory over empiricism, and the codification of knowledge into abstract systems of symbols that can be translated into many different and varied circumstances. Every society now lives by innovation and growth; and it is theoretical knowledge that has become the matrix of innovation (Bell, 1967, p. 29).

Because, as Kerr says, the "university is at the center of the knowledge process" where theoretical knowledge is discovered, tested and systematized according to scientific criteria, the multiversity has risen to a position of prominence by advancing frontiers of knowledge through new discoveries and inventions, reshaping and creating new academic disciplines, fostering new modes of inquiry and providing new specialties for faculty research. Moving back and forth easily between the worlds of advanced study and practical application, faculty members have become highly specialized experts, teachers of graduate students, and administrators of complex research institutes, as well as consultants to businesses, industries, and governments around the globe. For graduate level education, for advanced technical and professional education, and for theoretical and applied research, the American multiversity has become the envy of the world.

For undergraduate education, however, the picture is considerably different. Frequently, freshman are taught by graduate assistants in large lecture halls. The multiversity is organized around highly specialized disciplines and departments reflecting the current research interests and professional aspirations of the faculty. Rarely are individual faculty concerned with providing undergraduates an integrated and coherent liberal arts experience. Clark Kerr himself recognized that undergraduate teaching was a low priority in the multiversity:

> concentrated on undergraduate instruction as they once were. This process has been going on for a long time; federal research funds have intensified it. As a consequence, undergraduate education in the large university is more likely to be acceptable than outstanding; educational policy from the undergraduate point of view is largely neglected. Now to escape the cruel paradox that a superior faculty results in an inferior concern for undergraduate teaching is one of our more pressing problems (Kerr, 1982, p. 65).

The Community College Movement

One of the most interesting responses to the need for better undergraduate teaching and more community-directed services came through the gradual establishment of the comprehensive public community college in the 1950's. This institution was designed to serve the local community by providing residents with vocational training, academic preparation leading to an associate's degree or transfer to a senior college, continuing education, remedial or developmental education, and community-based education. Such a mission meant that faculty members were hired as full-time teachers and were not expected to conduct research or engage in extensive scholarly activities.

The popularity of this form of higher education can be seen in the numbers: in 1960, there were 521 community colleges enrolling 450,000 students. In 1970, there were 892 community colleges enrolling 2.2 million students, and by 1980, there were 1274 community colleges enrolling more than 4.5 million students. In 1986, there are 1315 community colleges enrolling 4.8 million students, comprising 44% of the enrolled undergraduates in the nation (College Board, 1986, Table 1, p. 4). In terms of the diversity of this population, 64% attend part-time, 52% are women, and 24% identify with a minority group. More than half of the minority students in college *began* in a community college, a significant proportion were academically poorly prepared, and their average age is 29 (College Board, 1985, *Summary Statistics*, p. 2; Cohen, 1985, p. 3, 10).

It is clear from these statistics that the comprehensive community college has been a major factor in the democratization process since World War II. By serving the needs of local communities and by providing a low cost educational opportunity, community colleges, indeed, have become what Cohen calls the "people's colleges."

> Access and commitment to growth have been the dominant values of community colleges. They have opened their doors to people who could not afford the expense of moving away from home and establishing full-time residency at a senior institution. Community colleges charge lower tution fees and admit students with little regard for prior academic achievement. They organize programs for everyone, from displaced workers to illiterate adults, and programmatically accommodate people's interest in problems such as aging and substance abuse, and adjustment to divorce. They are truly the people's colleges and access for everyone is their greatest appeal (Cohen, 1985, p. 4).

Faculty teaching in community colleges face considerable challenges in carrying out this comprehensive mission. The skill levels of students may range from 6th to 14th grade-level reading and math, and as more adults from increasingly diverse backgrounds, life styles, and academic preparation enroll, community colleges face serious educational challenges. Already stop-out and drop-out problems exist, especially among minority students, who do not have noteworthy success rates in meeting their educational goals. The democratic promise of the people's colleges may be in real jeopardy.

Cross has argued (1981) that the community college setting represents a new educational frontier where quality education can be provided for each individual. Recognizing that community colleges have created new opportunity with open admissions, community involvement, comprehensive curricula, and emphasis on teaching, Cross looks ahead to an egalitarian system where everyone can learn and where society can teach all of its citizens whatever they need to know to live "the good life." For Cross, this vision stems from the diversity of student backgrounds and the goals inherent in open admissions policies.

The structure of traditional education, however, is designed for student homogeneity rather than diversity and rests upon group instruction with fixed time boundaries. In moving beyond traditional community college boundaries, Cross and others call for individualizing education with a focus on the learner's achievement of clear competencies rather than a simple accumulation of courses and credits. Engaging students actively in the learning process has been encouraged in a number of ways by various educational researchers (Astin, 1985; Gamson, 1985; Boyer, 1987), and Cross identifies several underutilized tools for opening education effectively to this diversity. Because "the use of class time primarily for the dissemination of information by the teacher is pedagogically ineffective, and it is also economically inefficient" (Cross, 1981, p. 15), Cross thinks that peer tutors, self-directed learning projects, more effective use of technology, and the use of the Personalized System of Instruction (PSI) are valuable tools in strengthening individualized education.

The External Degree Movement

By the end of the 1960's, traditional higher education had responded to the imperatives of growth essentially by replicating existing models of the massive multiversity, by upgrading regional state colleges, and by establishing comprehensive community colleges. For thousands of undergraduates, this growth translated into multiple sections of courses using a common syllabus, auditorium-sized classes "managed" by thousands of teaching assistants, and a loss of personal identity or purpose in the educational process.

During this same period, other indicators of social and economic change appeared. The Civil Rights Movement, the Free Speech Movement, the Anti-War Movement, and the Women's Liberation Movement, among others, called attention to persistent inequities, enduring discriminatory practices, and a misguided foreign policy — all demanding that a democratic culture recognize fully the implications of a pluralist society and diverse social forms within that society.

In higher education, for example, the "golden era of growth" had spawned serious side effects. Frank Newman found "disturbing trends toward uniformity in our institutions, growing bureaucracy, overemphasis on academic credentials, isolation of students and faculty from the world —

a growing rigidity and uniformity of structure that makes higher education reflect less and less the interests of society"(1971, p. vii). Hodgkinson's survey (1970) similarly concluded that homogeneity among American colleges and universities had increased since 1950, despite the outpouring of student protest during the 1960's. Calls for *Deschooling Society* and the creation of Free Universities found willing listeners and participants. The Newman Report concluded that "the foremost task of public policy is to create the conditions under which new educational enterprises can be founded and can endure" (1971, p. 63).

Recognizing that reform and responsiveness must become more central to higher education thinking and action, a Commission on Non-Traditional Study was established in February 1971 under the joint auspices of the College Entrance Examination Board and the Educational Testing Service with a grant from the Carnegie Corporation of New York. Its mission was to provide a national perspective on the issues surrounding non-traditional alternatives and to make recommendations for fulfilling the promise of the external degree movement. Several important reports came out of the Commission's work: *Explorations in Non-Traditional Study*, 1972; *The External Degree*, 1973; *Diversity by Design*, 1973; and *Planning Non-Traditional Programs*, 1974. The Commission not only sparked nationwide debate over the need to diversify American higher education, but it promoted the revitalization of many traditional colleges in the direction of serving new learners in new ways.

Against this backdrop of social and historical events, the external degree movement took shape, providing new lines of access for what have become known as "nontraditional students." Sometimes called the "extended degree" or "University without Walls" phenomenon, the movement produced a host of new institutions in the early 1970's. Empire State College, for example, was founded in 1971, as was Metropolitan State University in Minnesota. Other institutions established during this same period included Thomas Edison State College (1972, New Jersey), Evergreen State College (1967, Washington), Vermont Community College (1970), and the Regents External Degree, now Regents College (1970, New York). Other nations also responded. For example, in 1969, the British Open University began in England and quickly became the largest and most successful extended degree program in the world. By 1976, the BOU enrolled 76,000 students and had graduated over 11,000 (Perry, 1977).

About the same time, important national organizations were also created to serve as alternate models and sources of support, both financial and programmatic. At the federal level, the Fund for the Improvement of Postsecondary Education (FIPSE) was created in 1972 as a separate agency with the explicit mission of promoting innovation, experimentation, and dissemination of new programs to new student populations. A year later, in 1973, the Council for the Advancement of Experiential Learning (CAEL) was formed, in part through the support and leadership of the Educational Testing Service and by a grass roots group of individuals and institutions, to open the door of higher education to new, learners by recognizing and creating appropriate forms of learning.

Although external degree programs did not enroll millions as did the community colleges, they did serve to provide a range of educational alternatives for adults and full-time workers, as well as new program models for traditional campus programs. New approaches to learning have taken such forms as individualized education through contract learning (exemplified by Empire State College, Metropolitan State University, Community College of Vermont, and New College in Sarasota, Florida); competency-based learning (as seen at Alverno College in Wisconsin and Hampshire College in Massachusetts); an examination and assessment model for independent learning (through Regents College in New York and Edison College in New Jersey); the consortium-based approach (in the University of Mid-America, California State's Thousand Mile Campus, and the widespread University Without Walls programs of the Union for Experimenting Colleges and Universities, based in Cincinnati, Ohio); and the experiential learning approach found at Justin Morrill College of Michigan State University and in CAEL, now headquartered in Columbia, Maryland (see Medsker, *et al.* 1975; Grant, *et al.* 1979; Sosdian, 1978; ESC, 1979; Chickering & Associates, 1981).

Through these new institutions and programs developed at traditional colleges and universities, the external degree movement has provided access to higher education for a wide range of individuals and social groups heretofore excluded. The major feature of external degree programs is that they tend to be student centered and that the students are often adults. Recognizing the importance of meeting the educational needs of these learners, external degree programs have responded by tailoring programs academically, as well as pedagogically and administratively, to the particular interests, motivations, objectives, and background experiences of individual students. These programs represent a considerable departure from the traditional campus-based approach, which centers on faculty expertise and fixed content in a disciplinary or departmental context.

V. Connecting the Individual to Society through Education

The college curriculum is for most graduates a major vehicle for connecting the individual to society. Addressing a body of knowledge and skills in terms and forms accepted by the larger society, it provides ways of understanding which are removed from the merely personal or parochial. However, the gap between the personal and public expectations becomes more difficult to bridge when individual students fail to fit the standard profile of an undergraduate (because of age, social or life circumstances, or academic preparation). If they are to effect a firm connection between a real diversity of individuals and society, curricular structures must adapt accordingly. Yet curricular ideas spawned by the external degree movement, ten years ago seen as significant democratizing initiatives, are currently under attack by those once again arguing for a core curriculum or even for a return to the Great Books approach (Boyer & Kaplan, 1976; Bennet, 1986; Boyer, 1987; Bloom, 1987). How should higher education empower individual learners with appropriate specialized knowledge and skills and also link them to the broad-based community of values which bind together the larger society? By providing an alternative to the elusive core curriculum, the external degree approach represents an important step toward an education that is both meaningful to the individual student and responsive to communal values (Hall and Kevles, 1982; Nussbaum, 1987; Pouncey, 1987; NIE, 1984).

In a sense, the history of curricular reform has also been a history of the democratization of higher education. Over the past century, the required classical curriculum of the pre-Civil War period was radically transformed and extended, both by the free elective system advocated by Eliot at Harvard and by the establishment of land grant institutions with the Morrill Act. These changes led to a rapid rise in courses offered, the formation of departments, and the creation of research institutes. Since World War II, there have been periods of curricular stability followed by periods of curricular innovation as society responded to the employment needs and pent-up consumer demands during the prosperous 1950's, the post-Sputnik challenge, and the upheavals of the 1960's leading to curricular additions in Black studies, Women's studies, environmental studies, and many others. The common core, distribution requirements, and the departmentral majors of the 1950's gave way to interdisciplinary studies, new departments with specially focused studies, and a more flexible approach to determining what courses were appropriate for a given major or department. By the mid-1970's, reaction to the curricular excesses of the 1960's led reformers to call for a "new core curriculum," higher requirements, and standards of achievement (Harvard Report, 1976; Boyer and Kaplan, 1976).

A number of reformers and national commission reports have advocated a return to a singular curricular approach reminiscent of the prosperous 1950's in order to insure education of a consistent high quality and to improve America's competitive position. But the logic, desirability, and possibility of superimposing such a core curriculum on the current character of higher education remain questionable. Not only do we have an unprecedented diversity among students and their backgrounds, but the cultural diversity which is a constant source of new energy and perspectives inevitably resists the categorical reduction and exclusion required by a common core curriculum. In the face of the need to reconcile the explosion of knowledge in virtually every field, the profound diversity of students' needs, interests, and goals, and a professionalized faculty committed to specialized disciplines and research activities, the likelihood of reaching agreement about what constitutes a common core is minimal.

The external degree movement, on the other hand, represents a serious effort to recognize the diversity among students and curricular strategies. Hall voices the need to resist both narrow technical training and a core curriculum comprehending common social values:

> A nation whose educational system turns out technocrats steeped in encyclopedia knowledge with no ability to synthesize and make critical judgments is certainly worse off than a society whose institutions of higher learning indicate both knowledge and the tools to use it. A nation's view of what, how, and why people learn is an expression of that nation's values. And if a nation values the development of fine technicians who lack the capacity to

> ask questions that relate their knowledge to large social issues, then the curriculum should, as in the Soviet Union, provide specialized knowledge in specialized institutions for specialized technological purposes.
>
> But a curriculum that values intellectual motivations and powers of synthesis and analysis over memorization and recall does not necessitate a choice between a core of requirements and chaos. Innumerable alternative curricular approaches exist. . . . All such curricular alternatives share the assumption that not every student must study a common faculty-determined body of knowledge. The curriculum that does not recognize the diverse interests of a heterogeneous student clientele ignores the object lessons of the protests of the recent past. Any curricular approach that neglects the many imperatives of its times can only subvert the community purposes that advocates of the core curriculum so dearly cherish, because such an approach shows great disrespect for the wealth of individual values that reside in any society (Hall & Kevles, 1980, p. 43).

Recent literature in higher education has affirmed the importance of this seemingly paradoxical approach — the need, on the one hand, to connect and affirm the relationship between learning and the larger society (Boyer [1987], Astin [1987], Palmer [1987], Gamson [1984], Bellah [1985]), and, on the other, to individualize education, to tailor it to the needs, interests, and capacities of individual students (Cross [1981], Astin [1986], Chickering and Gamson [1987]). One way to understand the paradox is to conceive of each student's individual context as a series of concentric circles expanding outward from the student's most personal characteristics and concerns to the immediate community environment and finally to the society, nation, and world at large.

To help resolve the paradox, Palmer (1987) brought us back to fundamental educational questions: How do we know? How do we learn? How do we teach? Palmer argues that

> the *way* we know has powerful implications for the *way* we live. I argue that every epistemology tends to become

> an ethic, and that every way of knowing tends to become a way of living. I argue that the relation established between the knower and the known, between the students and the subject, tends to become the relation of the living person to the world itself. I argue that every mode of knowing contains its own moral trajectory, its own ethical direction and outcomes (p. 22).

Palmer demonstrates his argument by contrasting the dominant epistemology of objectivism, comprising objectivity, the analytic, and the experimental with the newly emerging epistemology of the communal, stressing the relational nature of reality, synthesis, and the "hidden wholeness" of the world. Palmer continues his argument by stating that "community must become a central concept in ways we teach and learn . . .. Knowing and learning are *communal* acts. They require a continual cycle of discussion, disagreement, and consensus over what has been and what it all means"(p. 25).

Palmer's call to community focuses first on the academy's own value system and how learning occurs. Other researchers have recently reviewed what we know about learning and report that there are effective principles of collaboration that can be applied in addition to the epistemological ones discussed by Palmer. Chickering and Gamson (1987) identify seven principles for good teaching and learning in undergraduate education:

1. encourage contacts between students and faculty;
2. develop reciprocity and cooperation among students;
3. use active learning techniques;
4. give prompt feedback;
5. emphasize time on task;
6. communicate high expectations;
7. respect diverse talents and ways of learning

(Chickering and Gamson, 1987, p. 3).

Although Chickering and Gamson set forth practices from the viewpoint of the teacher (not the learner) and focus on the teacher's *how* (not the subject matter *what*), they marshall substantial evidence that these seven practices multiply effects when all are present.

Astin has been focusing attention on number two in the above list — developing reciprocity and cooperation (1985, 1986, 1987).

Deeply involved in the higher education reform movement, Astin calls for a talent development approach to excellence drawing upon a cooperative view of human nature and society to replace the reputational and resource approaches based on a competitive view of human nature. The talent development view of excellence stresses the college's ability "to affect its students favorably, to enhance their intellectual and scholarly development, and to make a positive difference in their lives" (Astin, 1987, p. 14). Astin argues that one of the basic skills to be developed in the general education part of the curriculum is the "capacity to be a good team member and work cooperatively with co-workers" (p. 16). As Astin's review of the literature revealed, few liberal arts programs are consciously designed to encourage the development of values such as empathy and collaborative learning.

> Collaborative approaches produce better learning in the vast majority of studies; the method is highly cost-effective and helps solve two of our most vexing pedagogical problems: large class size and gross differences in educational preparation. For my purpose here, however, the most important thing about collaborative learning is that it facilitates the development of teamwork skills and encourages the individual student to view each classmate as a potential helper rather than as a competitor. Under it, students learn to work together toward common goals (Astin, 1987, p. 17).

Charles Muscatine advocates a creative pluralism in the design of a new curriculum and characterizes the present system as a

> marvel of short-term convenience; in the long term, it is a hindrance to education for democracy, and for individual initiative. Its design promotes memorization in place of thought and imagination; passive acceptance in place of questioning and contribution; superficial consumerism in place of persevering with a problem in depth. It propagates the dangerous myth that civic and moral judgment must finally give way to technical expertise. It fails notably to habituate the student to functioning in the process of informed decision making that is the ideal of our form of government and essential to our conduct of business (1982, p. 105).

Peering into the future, Muscatine views tomorrow's curriculum as requiring inquiry into three fields of knowledge — learning theory and human development, the modes of thought, and future problems of human civilization. He argues:

> An emphasis on learning theory and human development responds to the imperative need to start where the student is, to respect individual differences in background and temperament. An emphasis on the modes of thought on the operation of the mind responds to the ever more rapid obsolescence of information, of subject matter. It anticipates that the *how* of learning will need to become more important in relation to the *what* than it is now. An emphasis on *problems* of human culture tips the balance in favor of a curriculum focused on what Ernest Lynton has called . . . "informed decision making." The notion is powerful and integrative. It keeps intellectual activity — the dealing with information and ideas — at the center of the curriculum, while insisting on the ultimate importance of value judgments. It proclaims a role for the individual but calls for the social responsibility on which civilized society depends. While it dos not enforce the primacy of any particular social or cultural tradition, it favors cosmopolitanism and discourages insularity. Its major axiom is fundamentally political, but one that we can widely agree on: democracy depends on the ability of individuals (in Lynton's words) to judge issues and to make decisions' (1982, p. 101).

Muscatine's views bring us back to the Jeffersonian position from which this essay began. Maintaining and enhancing democracy requires that higher education provide curricular strategies and value judgments which serve to link and bind individuals to the larger commonwealth. External degree institutions offer special curricular strategies that start with students and enable individuals to enhance their talents in the context of society's traditions and its future.

VI. The Empire State College Experiment

Within this context of curricular debate and change, Empire State College was designed to accommodate, even to thrive on, change. As the Governor of New York State, Nelson Rockefeller, emphasized in his 1971 budget message, Empire State would

> serve the many young people and adults for whom individual off-campus instruction will be more effective than traditional patterns of education. The State University of New York will create a new, non-residential University College with an unqualified commitment to test and experiment with new, flexible and individualized modes of learning, including new approaches to delivery of services, residency, certification and transfer (SUNY *Prospectus*, 1971, p.1).

The Chancellor of the State University of New York, Ernest L. Boyer, argued that "a new focus and new shapes of education" are necessary ingredients to "make the substance of education and educational processes more relevant for the individual and more responsive to the needs of society" (Boyer, 1971, p. 1).

Empire State College is first and foremost a student-centered institution. Its educational approach is to begin with the individual and then design an appropriate educational program to meet the individual's academic goals and interests and, ultimately, to connect the individual to the values and community of interests in society. This highly individualized approach to education is by definition designed to keep the democratization process to the forefront, ensuring the real connection between student, studies, and their larger social context.

Student Diversity at Empire State College

Demographically, students at Empire State College fit the profile for diversity. Two-thirds are between 30 and 50 years old, with an average age of 37 and an age range from 18 to 80. Almost 60% are women; two-thirds are married. Almost one-fifth (18%) identify themselves as minorities. Economically they are upwardly mobile and employed in semiprofessional, supervisory, technical and clerical positions, making an average salary of $17,500. However, one-third of the adults have incomes below $10,000, and one-third must have financial assistance to complete their work for a degree.

The primary goals of adult learners at Empire State include (in order of priority): increasing knowledge of an academic field, attaining specific skills useful on a job, enriching their own learning and personal fulfillment, and improving their professional status. Two-thirds of those who enroll State have completed some prior college study, quite often an associate's degree, and almost 60% intend to pursue a master's or professional/doctoral degree in the future. Business, Management, and Economics is the most popular area of study. Over 80% of Empire State students applied only to Empire State and view the college as a place particularly suited to meet their learning and personal needs. They also see the ability to work and study at the same time and to earn credit for prior college-level learning as appealing features. These adult learners view themselves as strong on independence, persistence, drive to achieve, leadership ability, and academic ability — traits characteristic of adult students (Office of Research and Evaluation, 1986, pp. 8-9; Lehmann, 1975, 1980, 1981).

The diversity of this student profile aligns only partially, however, with that of typical adult learners identified in the literature. Many researchers, for instance, have found that adult learners frequently are relatively affluent, well-educated, white, middle-class individuals (Cross, 1981; Darkenwald and Merriam, 1982; Brookfield, 1986; Aslanian and Brickell, 1980). Cross states that the "elderly, blacks, those who failed to graduate from high school, and those with annual incomes under $10,000" are severely underrepresented in adult programs (Cross, 1981, p. 53). By contrast, Empire State College enrolls students across the entire age range, attracts a significant proportion of low-income and minority students, and enrolls almost 20% with a high school diploma or less (Office of Research and Evaluation, 1986). On the basis of demographic diversity, Empire State College is different from many external degree or university-without-walls programs because it attracts and seeks to serve a real cross-section of the population. With more than 13,000 graduates in 16 years, Empire State exemplifies an effective means for meeting the democratization challenge in American education (Palola, *et al.*, 1977).

The Academic Program

Three fundamental educational principles provide the foundation and direction for the College's academic program:

1) that effective learning derives from purposes and needs that are important to the individual;

2) that learning occurs in varied ways and places;

3) that styles of learning and of teaching may differ significantly from person to person and from one setting to another (ESC, 1977, p. 2).

On these principles the College has refined its mission and developed a distinctive institutional character, emerging from a combination of innovative elements:

* individualized education, carried out through a contract mode of learning;

* an open format for access, placing minimal constraints on the time, place, residence, and manner of learning;

* a degree program developed by the student in consultation with faculty, joining the course of study to that student's educational goals;

* a portfolio assessment process certifying prior college level learning;

* a flexible curriculum, incorporating broad areas of multidisciplinary study and modes of inquiry;

* continuing development of learning resources utilizing new pedagogies and technologies;

- a highly dispersed and decentralized college organization, relying for its delivery on a unique mentor-student model (ESC, Self-Study Report, 1979; see also B. Clark, 1970).

Rather than core curriculum or major/minor requirements, Empire State faculty devised curricular guidelines, conventions and standards of practice to provide a context through which the individual's unique goals and interests are linked to the broader traditions and values of the academic world and eventually to the values and needs of the larger society. Though in basic agreement with their ultimate intent, this approach contrasts sharply with the recent calls for a core curriculum or return to the "Great Books" (Bloom, 1987; AAC Report, 1985; Boyer, 1987).

Democratizing the Teaching Role of Faculty

Crucial to the success of this unique process is the faculty mentor, whose role incorporates duties beyond those usually associated with traditional faculty and whose primary responsibility is teaching. External degree programs have expanded the teaching role of the faculty in part to meet the challenge of student diversity and in part to meet the challenge of improving the teaching-learning process. The process of democratization which started with student diversity now requires a democratization of the teaching role to meet effectively the learning needs of adults. Mentors assist students in the development of individual degree programs, work with students in their own areas of expertise and and facilitate their learning in other areas through the use of tutors and learning resources. Mentors also advise and counsel students on academic and related matters, and retain responsibility for the overall evaluation of student work.

Alternative educational programs have been experimenting with new approaches to teaching and learning that are individualized, experimental, collaborative, problem-centered, active, and involved. Such innovative approaches create a corresponding set of faculty roles that go beyond the traditional, narrow teaching function of the classroom dissemination of information. As Cross put it, even for traditional faculty, "It no longer is sufficient for faculty members to stuff students' heads with subject matter" (Cross, 1986). Even the name for teaching has changed — teachers have become facilitators, sponsors, collaborators, brokers, and mentors.

Empire State College faculty mentors have creatively enlarged their roles to include contract learning and degree program design. As Clark describes it, the elements of negotiation, active listening, astute questioning, and collaborative judgments about what is to be learned and how it is to be evaluated are central to the learning contract process.

> In order to negotiate a learning contract with an individual in an effective manner, a faculty member must demonstrate the ability to ask provocative questions; listen to what students are really saying; provide appropriate information regarding the institution; help the student structure an individualized set of learning activities; suggest a number of alternative approaches to the content to be studied; and specify the methods, criteria and standards, the types of evidence or indicators to be emphasized in the evaluation of the student's performance (T. Clark, 1981, p. 596).

Degree program planning is a parallel process which is even more significant in that it determines an appropriate and acceptable program of study. For this process to work, each student, with a faculty mentor, must carefully assess his or her educational goals, background, prior learning, and level of skill and preparation for college work, the type of degree to be pursued, and appropriate topics of study.

Implicit in the mentor's role as contracts and degrees are negotiated and put into place are a range of issues that go beyond what the formal process, described above, entails. The creative and challenging aspects of the mentor's role involve astute facilitation efforts as well as knowledgeable curricular planning activities, drawing on the practices and accepted standards of higher education and providing critical links to the cultural, economic, social and political values of the larger society (Bradley, 1975, 1978; Daloz, 1986; Schneider, *et al.*, 1981).

Brookfield identifies an important aspect of the exchange between student and faculty-facilitators, distinguishing the tension that lies between the felt needs expressed by adult learners (perceived wants, needs, and goals) and needs prescribed by the mentor's judgment concerning the academic skills, knowledge, behaviors and values that adults should acquire.

> Accepting the felt needs rationale and giving learners what they say they want means that the facilitator has abdicated responsibility for contributing to the debate about normative standards, values, and criteria in training and education. To say one is meeting felt learner needs sounds humanistic, learner centered, and admirably democratic, yet to do so without allowing one's own ideas, experience, insights, and knowledge as an educator to contribute to the educational process makes the facilitator a service manager, not a fully participating contributor. It also condemns learners to staying within their own paradigms of thinking, feeling, and behaving. Since it is very difficult to generate alternative ways of thinking about, and behaving in, the world entirely as a result of one's own efforts, an important task of the facilitator is to present to learners diverse ways of thinking and acting (Brookfield, 1986, p. 21).

A critical part of the mentor-advising role lies in the mentor's ability to draw out the adult learner's "felt needs" to place them in a larger context of appropriate educational goals and academic studies. Belenky *et al.* call this "connected knowing" rather than "separate knowing" and discuss the role of teacher as midwife rather than banker (1986, pp. 217-222). In this process of discussion, negotiation, and challenge, the mentor "presents alternatives, questions givens, and scrutinizes the self" (Brookfield, 1986, p. 125). Brookfield also recognizes the unique responsibilities in mentor advising, facilitating, and academic planning:

> The task of the teacher of adults is to help them to realize that the bodies of knowledge, accepted truths, commonly held values, and customary behaviors comprising their worlds are contextual and culturally constructed.

> Through being prompted to analyze their own behaviors and to consider alternative ideas and values, adults can come to an awareness of the essential contingency of their worlds. Such an awareness is the necessary prelude to their taking action to alter their personal and collective circumstances (Brookfield, 1986, p. 125).

Brookfield makes the case for the mentor to facilitate an adult's learning by critically examining the "felt needs" and contextual relativism of the individual's world. Yet this is only half of the mentor's job. It may be equally important for the mentor, once the contextual contingency is established, to help the student affirm newly realized knowledge, values, and attitudes. In Perry's scheme of intellectual and ethical development, this is the stage of "committed relativism" (1970).

Mentors, then, must be knowledgeable across a wide range of academic disciplines and topics of study, and they must understand disciplinary modes of inquiry and possess a repertoire of effective approaches to engage adult learners in the academic issues central to their programs of study. Mentors serve as expert advisors, resource brokers, and curricular planners with proven abilities to link the adult learner to the academic world; they are not "curricular czars" or omniscient guides who predetermine what and how adult learners acquire their degrees. The curriculum planning process they engage in is individually negotiated and takes into account the particular circumstances and backgrounds of each adult learner as well as the requirements of an academically sound program of study. Mentors also consult on program design issues with other faculty at the College and draw upon an extensive bank of adjunct faculty and tutors across the state to assist students in their particular contract studies.

One caveat must be mentioned here. As the teaching role of the faculty in alternative programs becomes more democratized, faculty members also take on new dimensions in the advising and counseling process. Effective mentoring and advising requires an understanding of the phases of adult development, including such things as turning points and role changes, stress, fear and trust, stock-taking, shift in time perspective and locus of control, aging and the social clock, appropriate intervention strategies, and special counseling skills involving creative listening, life planning, and effective communication (Schlossberg, 1986; Chickering and Gamson, 1987; Daloz, 1986; and Palola, 1983). Mentors acquiring such understandings, knowledge, and skills in advising have expanded their responsibilities and opportunities considerably beyond the traditional instructional/advisor role.

The student-mentor relationship is an intense one-to-one relationship and often becomes personal, creating specific sets of dependencies and interdependencies. Because this relationship may be hard to sustain and can put both student and mentor at the edge of their competencies and tolerance, the advising process may become infused with fragile and sometimes emotionally laden issues, sometimes with long-term educational consequences. Placing the educational matters under discussion in the context of adult development is important, but it is equally important that faculty who work closely with students not be expected to carry over those advising and counseling duties into a therapeutic relationship. A developmentally conscious faculty member, however, will be sensitive to the educational and personal needs of adults, recognize the developmental tasks ahead, and use the educational process as a setting in which adult learning can be enhanced (Lehmann, 1980).

VII. Conclusion: The Democratization Process Continues

The great strength of the American higher education enterprise has been its responsiveness to the needs of a pluralistic democratic society which requires that citizens be aware of their own individual interests and values and of their relationship to the larger context of society and its values. American higher education has been elastic enough to accommodate new learners of every age, serving them in new and old ways to meet their own and society's educational needs. Brookfield argues that the context of learning and its link to the larger community is the dynamic that preserves and enhances the democratization process.

> The extent to which adults are engaged in a free exchange of ideas, beliefs, and practices is one gauge of whether a society is open, democratic, and healthy. If adults of widely differing class and ethnic groups are actively exploring ideas, beliefs, and practices, then we are likely to have a society in which creativity, diversity, and the

> continuous re-creation of social structures are the accepted norms (1986, p. 1).

This historic democratic process continues into the foreseeable future with America's commitment to achieving universal higher education. The most recent report of the National Commission on the Role and Future of State College and Universities calls for a "Marshall Plan" to strengthen education at all levels, ensuring that "at least 35 percent of American adults have a college degree by the year 2001" (American Association of State Colleges and Universities, 1986, p. 5). In the Commission's words, "to accept this challenge, state colleges and universities will have to embark on an educational venture without precedent" (1986, p. 14).

The external degree movement represents a significant part of this democratizing venture, opening access and providing quality education for "new students" under a very different set of learning conditions and arrangements. This essay has sought to trace the historical movement toward democratization of education in America and identify those approaches that embrace collaborative learning, opportunity and quality, individualism and community. Ten years ago, Martin identified the creation of a new two-track system of higher education that was more crippling and socially divisive than previous differences between public and private colleges or between community colleges and senior universities, or between secular and religiously affiliated institutions (1978). Characterizing the two tracks of academe as "broadly educational" and "narrowly academic," Martin identified the "nontraditionalists" and the "traditionalists" with two sets of code words: traditionalists adhere to *standards*, serve *regular students*, focus on *quality*, claim *authority*, set *sequences* in knowledge and programs, stress *content*, and believe in *community*. Nontraditionalists focus on *diversity*, *new students*, *opportunity*, *adaptiveness*, *units*, *competencies*, and *individualism* (p. 43). Although American commitment to educational diversity and the democratization process was assumed to have no limits, at the end of the 1970's Martin saw a shaken public confidence in the massive infusions of federal aid and a limit to the American tolerance for diversity. Martin argued that the centrifugal forces wrapped up in the traditionalist and nontraditionalist positions were producing a breakdown in the larger culture along these lines:

> In America, educators have arrived at a place they cannot inhabit. Their differences in educational philosophy, in methods of teaching, in standards and criteria, in modes of measurement, and in judging the meaning of what is measured are so great, and the consequences of their commitments have been so profound, that we are now separating into a two-track system (p. 46).

Martin's ominous warnings and predictions in 1978 are worth examining again in 1988. Martin conceded that higher education had achieved one basic goal, equality of access, and that definite progress had been made regarding a second basic goal, equality of opportunity. He insisted that the third major goal, "quality for a significantly larger proportion of the population" had not been realized (p. 45). From the vantage point of 1988, however, we can point to substantial strides toward that third fundamental goal. The democratization process sketched in this essay has shown that the great American social experiment continues. Not only do the community colleges and the external degree movement offer the opportunities to extend access, equality, and quality to many social groups and individuals heretofore denied such basic goals, but many aspects of their work with students is being incorporated into programs on traditional campuses.

This essay has argued that, by 1988, the tensions between the traditionalists and the nontraditionalists have been reduced. What Martin posed as competing value positions have become more integrated in the curricular programs and faculty teaching strategies of the late 1980's. Community *and* individualism, content *and* competencies, standards *and* diversity, can be blended in ways that meet both the individual learner's educational goals and the larger needs of society. As the external degree movement enters a more mature phase of its development, the two-track system is shifting to a more collaborative higher education enterprise. In their quest for excellence in education today, Americans can turn to a much more responsive and adaptive group of colleges and universities which have invested heavily in providing flexible educational modes suitable to the challenges of the 1990's.

Within that context, Empire State College has established one noteworthy educational alternative that works for adults. As an experiment, Empire State has extended America's historic pattern of outreach, has opened up new visions of the future, and has sought to bridge two great traditions — individuality and community — in a new learning configuration. The generic unfolding of the democratization process in America means that the unfinished agenda for 2001 poses a special challenge and opportunity for experimenting institutions like Empire State College to break new ground in serving the "new learners" of the future.

In its short lifetime, Empire State College has fulfilled a part of the Jeffersonian promise of democracy. Yet many challenges and opportunities for increased access, improved quality, and more effective education lie ahead. In *No Limits to Learning*, the Club of Rome exemplified the need for the democratization of education in a worldwide context by calling the world's attention to a vast "learning gap" and presenting its plan for "innovative learning" (Botkin, *et al.*, 1979). Contrasting the needs for anticipatory and participatory learning with the "maintenance" learning found in most higher education institutions, the Club of Rome report illustrated the practical significance of innovative societal learning, set forth a world context for change and a new learning perspective for coping with global issues.

Other nations may generate new models for meeting the challenges posed by the Club of Rome, and American colleges and universities will no doubt continue to explore diverse experiments in institutional design to meet the challenges inherent in the democratization process. As this essay has argued, however, American colleges and universities are already meeting those challenges through curricular experiments, new strategies for improving teaching and learning, and the establishment of new institutional forms such as the multiversity, community colleges, and the external degree movement. In a pluralist society, American colleges and universities since World War II have demonstrated their resilience in providing greater equality of access, equality of opportunity, and, to some extent, equality of result. As American higher education has moved from an elite to a mass to a nearly universal system, it has responded and will continue to respond to the Jeffersonian call for enlightened citizenship.

REFERENCES

American Association of State Colleges and Universities. *To Secure the Blessings of Liberty.* Report of the National Commission on the Role and Future of State Colleges and Universities. Washington, D.C.: AASCU, 1986.

American Council on Education. *A Fact Book on Higher Education.* Washington, D.C.: ACE, 1969, 1984.

Aslanian, Carol and Henry Brickell. *Americans in Transition: Life Changes as Reasons for Adult Learning.* New York: College Entrance Examination Board, 1980.

Association of American Colleges. *Integrity in the College Curriculum: A Report to the Academic Community.* Washington, D.C.: AAC, 1985.

Astin, Alexander W. *Achieving Educational Excellence.* San Francisco: Jossey-Bass, 1985.

________________. "Competition or Cooperation? Teaching Teamwork as a Basic Skill." *Change,* September/October 1987: 12-19.

________________. "What does Value-Added Learning Mean Today?" Keynote Address, National Conference on Value-Added Learning. Saratoga Springs, New York. June, 1986.

Belenky, Mary Field, Blythe McVicker Clinchy, Nancy Rule Goldberger, and Jill Mattuck Tarule. *Women's Ways of Knowing: The Development of Self, Voice, and Mind.* New York: Basic Books, 1986.

Bell, Daniel. "Notes on the Post-Industrial Society." *The Public Interest,* No. 6 (Winter 1967): 24-35.

Bellah, Robert N., *et al. Habits of the Heart: Individualism and Commitment in American Life.* Berkeley: University of California Press, 1985.

Bennett, William. "Address at Harvard University Anniversary Celebration." *Chronicle of Higher Education,* 15 October 1986: 27-28.

Bloom, Allan. *The Closing of the American Mind.* New York: Simon & Schuster, 1987.

Botkin, James W., Mahdi Elmandjra, and Mircea Malitza. *No Limits to Learning: Bridging the Human Gap.* New York: Pergamon Press, 1979.

Bowman, Mary Jean. "The Human Investment: Revolution in Economic Thought." *Sociology of Education,* 39 (Spring 1966): 111-137.

Boyer, Ernest L. *College: The Undergraduate Experience in America.* New York: Harper and Row, 1987.

Boyer, Ernest, and Martin Kaplan. *Educating for Survival.* New Rochelle, NY: Change Magazine Press, 1976.

Bradley, A. Paul Jr. *The Empire State College Mentor: An Emerging Role.* Saratoga Springs, NY: Empire State College, 1975.

________________. *The New Professional: A Report on Faculty in Individualized Education.* Saratoga Springs, NY: Empire State College, 1978.

Brookfield, Stephen D. *Understanding and Facilitating Adult Learning.* San Francisco: Jossey-Bass, 1987.

Brubacher, J.S. and W. Rudy. *Higher Education in Transition.* New York: McGraw-Hill, 1968.

Carnegie Commission on Higher Education. *A Chance to Learn.* New York: McGraw-Hill, 1970.

________________________________. *Quality and Equality: New Levels of Federal Responsibility for Higher Education.* New York: McGraw-Hill, 1968.

Chickering, Arthur W. and Associates. *The Modern American College.* San Francisco: Jossey-Bass, 1981.

Chickering, Arthur W. and Zelda Gamson. "Seven Principles for Good Practice in Undergraduate Education." AAHE *Bulletin*, 39, 7 (March 1987): 3-7.

Clark, Burton R. "The Coming Shape of Higher Education in the United States." *International Journal of Comparative Sociology*, 2, 2 (September 1961): 203-211.

______________. *The Distinctive College: Antioch, Reed, Swarthmore.* Chicago: Aldine, 1970.

______________. *The Higher Education System: Academic Organization in Cross-National Perspective.* Berkeley: University of California Press, 1983.

Clark, F. Thomas. "Individualized Education." *The Modern American College.* Ed. Arthur Chickering. San Francisco: Jossey-Bass, 1981: 582-599.

Cleveland, Harlan. "Educating for the Information Society." *Change*, July/August 1985: 12-21.

Cohen, Arthur. "The Community College in the American Educational System." *Contexts for Learning: the Major Sector of American Higher Education.* Washington, D.C.: National Institute of Education, 1985. 1-17.

The College Entrance Examination Board. *Academic Preparation for College: What Students Need to Know and Be Able to Do.* New York: CEEB, 1983.

______________________________. *Summary Statistics.* Annual Survey of Colleges. New York: CEEB, 1985, 1986.

Commager, Henry Steele. "Social, Political, Economic and Personal Consequences." *Universal Higher Education.* Ed. McGrath. New York: McGraw-Hill, 1966.

Commission on Non-Traditional Study. *Diversity by Design.* San Francisco: Jossey-Bass, 1973.

Cross, K. Patricia. *Adults as Learners.* San Franciso: Jossey-Bass, 1981.

______________. "Taking Teaching Seriously." Plenary Session Address, American Association for Higher Education National Conference, March 1986.

______________. "On the New Frontier." *Community College Frontiers* 9 (Winter 1981): 10-16.

______________, and John Valley and Associates. *Planning Non-Traditional Programs.* San Francisco: Jossey-Bass, 1974.

Daloz, Laurent A. *Effective Teaching and Mentoring: Revitalizing the Transformational Power of Adult Learning Experiences.* San Francisco: Jossey-Bass, 1986.

Darkenwald, C.G., and S.B. Merriam. *Adult Education: Foundations of Practice.* New York: Harper and Row, 1982.

Denison, Edward. *The Sources of Economic Growth in the United States and the Alternatives Before Us.* New York: Committee for Economic Development, 1986.

Empire State College. *The Adult Learner in Non-Traditional Programs.* Saratoga Springs: Empire State College, 1986.

________________. President's Office. "Mission Statement." Saratoga Springs: Empire State College, 1977.

________________. *Access, Innovation, and the Quest for Excellence.* Saratoga Springs: Empire State College, 1979.

Eurich, Nell. *Corporate Classroom: The Learning Business.* Princeton, NJ: Carnegie Foundation for the Advancement of Teaching, 1985.

Freeman, R.B. *The Over-Educated American.* New York: Academic Press, 1976.

Gamson, Zelda, and Associates. *Liberal Learning.* San Francisco: Jossey-Bass, 1984.

Grant, Gerald, *et al. On Competence: A Critical Analysis of Competency-Based Reforms in Higher Education.* San Francisco: Jossey-Bass, 1979.

Gould, Samuel, and K. Patricia Cross. *Explorations in Nontraditional Study.* San Francisco: Jossey-Bass, 1972.

Hall, James, and Barbara L. Kevles. *In Opposition to the Core Curriculum: Alternative Models for Undergraduate Education.* Westport, CT.: Greenwood, 1982.

Hall, James, with Barbara L. Kevles. "Democratizing the Curriculum." *Change*, January 1980: 39-45.

Hodgkinson, Harold. *Institutions in Transition: A Study of Change in Higher Education.* Carnegie Commission on Higher Education. New York: McGraw Hill, 1970.

Houle, Cyril. *The External Degree.* San Francisco: Jossey-Bass, 1973.

Jencks, Christopher, and David Riesman. *The Academic Revolution.* Garden City: Doubleday and Company, 1968.

Kerr, Clark. *The Uses of the University.* Cambridge, MA: Harvard University Press, 1963, revised edition, 1982.

Lane, Robert E. "The Decline of Politics and Ideology in a Knowledgeable Society." *American Sociological Review* 31, 5 (October 1966): 649-663.

Lehmann, Timothy. "Do Men and Women in Transition Have Different Educational Needs?" (Occasional Paper.) Saratoga Springs: Empire State College, 1980.

________________. "Evaluating Adult Learning and Program Costs." *Modern American College.* Ed. Arthur Chickering. San Francisco: Jossey Bass, 1981. 748-773.

________________. "Educational Outcomes from Contract Learning at Empire State College." Presentation, American Association of Higher Education National Conference, Chicago, March 1975.

Machlup, Fritz. *The Production and Distribution of Knowledge in the United States.* Princeton: Princeton University Press, 1962.

Martin, Warren B. "The Limits to Diversity." *Change,* December/January 1978-79: 41-46.

Medsker, Leland, *et al. Extending Opportunities for a College Degree.* Berkeley: Center for Research and Development in Higher Education, U. Cal., Berkeley, 1975.

Muscatine, Charles. "Toward a New Curriculum." *In Opposition to the Core Curriculum.* Ed. James Hall and Barabara Kevles. Westport: Greenwood Press, 1982. 99-106.

National Center for Education Statistics. *Digest of Educational Statistics.* Washington, D.C.: U.S. GPO, 1976, 1987.

National Institute of Education. *Involvement in Learning: Realizing the Potential of American Higher Education.* Report of the Study Group on the Conditions of Excellence in Higher Education. Washington, D.C.: NIE, 1984.

Newman, Frank. *Report on Higher Education.* Washington, D.C.: Department of Health, Education, and Welfare, 1971.

Nussbaum, Martha. "Undemocratic Vistas." Review of *The Closing of the American Mind. New York Review of Books,* 5 November 1987: 20-26.

Palmer, Parker J. "Community, Conflict and Ways of Knowing." *Change,* September/October 1987: 20-25.

Palola, Ernest G. "Anxiety, Interpersonal Trust and Adult Learning: Evaluation Theory and Practice." *Continuum,* 47, 4 (July 1983), 24-29.

______________, *et al. PERC Handbook.* Saratoga Springs: Empire State College, 1977.

______________, Timothy Lehmann, and William R. Blisckle. *Higher Education by Design: The Sociology of Planning.* Berkeley: Center for Research and Development in Higher Education, U. Cal. , 1970.

Perry, Walter. *The Open University.* San Francisco: Jossey-Bass, 1977.

Perry, William G. *Forms of Intellectual and Ethical Development in the College Years.* New York: Holt, Rinehart & Winston, 1970.

Pouncey, Peter. "Closing with Bloom." *Amherst* 40, 2 (Winter 1987): 11-13, 24.

Report of the President of Harvard College and Reports of the Departments, 1975-76. Cambridge: Harvard University Press, 1976.

Rudolph, Frederick. *The American College and University: A History.* New York: Alfred Knopf, 1962.

Schlossberg, Nancy K., *et al. Perspectives on Counseling Adults: Issues and Skills.* Malabar, Florida: Kruger Publishing Co., 1986.

Schneider, Carol, George O. Klemp, and Susan Kastendiek. *The Balancing Act: Competencies of Effective Teachers and Mentors in Degree Programs for Adults.* Chicago: Univ. Chicago Center for Continuing Education, 1981.

Schultz, Theodore W. "Reflections on Investment in Man." *Journal of Political Economy* 76, 3 (May/June 1968), 327-347.

Sosdian, Carol P. *External Degrees: Programs and Student Characteristics.* Washington, D.C.: National Institute of Education, 1978.

______________, and Laura Sharp. *The External Degree as a Credential.* Washingon, D.C.: National Institute of Education, 1978.

State University of New York. *A Prospectus for a New University College: Objectives, Process, Structure and Establishment.* Albany, NY: SUNY, 1971.

Tewskbury, Donald G. *The Founding of American Colleges and Universities Before the Civil War: With Particular Reference to the Religious Influences Bearing Upon the College Movement.* New York: Columbia University Teachers College, 1932.

Tocqueville, Alexis de. *Democracy in America.* Edited and abridged by Richard D. Heffner. New York: New American Library, 1956.

Trow, Martin. "Reflections on the Transition from Mass to Universal Higher Education." *Daedalus,* Winter 1970: 1-42.

__________. "The Democratization of Higher Education in America." *Archives of European Sociology* 3 (1962): 231-262.

__________. "Problems in the Transition from Elite to Mass Higher Education." *Policies for Higher Education.* General Report. Paris: Organization for Economic Cooperation and Development, 1974: 55-101.

__________. "Elite and Mass Higher Education: American Models and European Realities." Revised presentation. Conference on Higher Education: Processes and Structures. Delaro, Sweden, June 1978.

__________. "Comparative Perspectives on Access." *Society for Research into Higher Education,* 1981: 89-121.

Weisbrod, Burton A. "Investing in Human Capital." *Journal of Human Resources.* 1 (Summer 1966): 5-21.

Wolff, Robert P. *The Ideal of the University.* Boston: Beacon Press, 1969.

***Lee Herman** has been a mentor at Empire State College for ten years. He directs a small unit of the College in which he works with students with a wide variety of interests and abilities. He is particularly interested in the integration of contemplative and practical studies and in issues, which cut across the disciplines. His doctorate is from the Committee on Social Thought at the University of Chicago.*

Lee Herman

Kris: An Education in Progress

"Consider, then, how it is with all midwives; that will help you to understand what I mean." Plato, *Theaetetus*, 149b

Kris wouldn't be welcome at any of Allan Bloom's "best universities." And she couldn't make much of E.D. Hirsch's list of culturally common knowledge. But, never having gone to college or associated with those who have, used to operating copper-extrusion machinery on the second shift, and newly pregnant with her first child, she's decided at 30 that she wants to get a college education.

I wonder why. "Because it's supposed to make your life better." How? "There's something inside me I want to bring out; and I don't just mean the baby." What? "I don't know yet."

She's proud of her work. She taught herself and others to run complicated machinery. She suspects people who don't appear to work hard, like the migrant fruit pickers who drive noisily into her rural village on Saturdays, spending, she supposes, food stamps she helped pay for on what she judges to be too much junk food, tobacco, and liquor. But she's interested in "helping them people." How? "By making sure they don't get more than they deserve."

We talk more about her town, and I realize that I shouldn't romanticize its isolation or her ignorance. It's where she happens to live, not a cozy matrix of traditional associations. The larger world for her is distant and opaque, save when strangers ("too many immigrants, too greedy for welfare") appear or the tax forms arrive.

I try to begin with studies which will reflect and expand her interests. She's excited about her pregnancy; she wants to express herself. We agree to try some literature and writing, especially about childhood. She'll read *Huckleberry Finn,* some poems and children's stories; and she'll write some stories of her own about moments in childhood. She's wondered where the alien people in her town came from. I suggest some American history, hoping that she'll discover the truth in the cliche that we're all immigrants.

She's said she might like to work in social welfare, though for now her desire to guard the gates of public order against freeloaders seems stronger than the interest she's also expressed in being "a sunshine lady." So Kris begins to plan her education by learning about careers in human services and something about the human beings who use them. She'll interview some people working in and relying on welfare; she'll talk to some other students in human services; and she'll read about human services specialities and poor people in contemporary America.

During our early meetings, I think condescendingly of Kris, and she's worried that I do. She hopes I won't put her down for "not talking right or reading books." But she also asks, "What will I get for my tuition money?" I hope that we can agree not to give authority to each other's discouraging impressions; and I wonder how I can use her mix of pride and diffidence. Then I realize that if I'm to hold up my part of a generous-minded educational agreement that I must understand that I need not, can not, and ought not invent this student. Education is intercourse, not parthenogenesis. I begin to understand that Kris must have already learned something tremendous in merely deciding to come to college at all. That she has found the boundaries of her world insufficient to define her and has chosen to cross them to enter mine bespeaks a critical, imaginative, and disciplined spirit which I'm not at all sure I could muster for a similar breadth of passage. Academics are ironically remarkable for being too satisfied with their sensibilities; and it's just this Kris has been warning me against: she's asking me to display some moral imagination as well. She's asking me not to condemn her for her weaknesses, as though my powers were sufficient to take her entire measure. She's asking me to share with her such powers as I have which she judges pertinent to her need. Then she'll take my questions seriously and I'll have no reason to blame her for her answers. This bargain becomes our educational contract, and it's more than enough of a common culture for us to proceed.

The more we talk, the more information we have in common and the more room there is for us to question one another without colliding against our agreement. I discover the pride she has in hard work. She's self-made and doubts anyone who isn't. I praise her self- reliance, but ask how she knows the farmworkers she sees on the weekends haven't worked hard all week, or the mothers she's seen at Social Services haven't made the most rational decisions they can from the choices open to them. She takes these questions in for future reference, and asks me "Why do the people who write the books you've assigned me use such fancy words?" I reply that sometimes they don't have to, but sometimes the words she doesn't know are the most precise ones. We look some up. She borrows my dictionary and then buys one (her first). "Why can't they write 'use' instead of 'utilize'?" Her point is well taken. However, she likes "exploit" over "use" because "'use' means too many different things." Kris keeps her dictionary on the kitchen table, next to other school books, lists of words to look up, and her new typewriter.

The history study doesn't work very well. It's a survey, with a sort of "diversity-of-our-people" approach. But it's too far away and possibly too tendentious for Kris to connect. She does demonstrate that she can manage the mechanics of industrious studenthood: she reads carefully and summarizes facts accurately. She's pleased that I praise her skills, but she doubts that any of this history has much to do with her. She wants to learn about her town, the prices she pays, the people and rules she encounters. We learn to travel from the center, to start with information and questions she judges to be pregnant with meaning.

The literature study she finds more interesting. She writes clear, brief synopses. She masters semi-colons and commas, and carefully records the difference between "it's" and "its." She's amazed she can understand poems. I'm amazed at her persistence in making sense of them. I learn to count on this strength as I put more challenging tasks to her. She catches exactly the sense of Millay's "The Cameo," its precision and melancholy. By the end of the study, she's read a Shakespeare sonnet and heard its music. She reads it aloud to me several times, until she's satisfied that she's begun to say it as it sounds in her imagination.

Her own short stories about children render significant moments with photographic clarity: a brother and sister awaken on Christmas morning; a young boy tracks and kills his first deer, feeling fear, regret, and finally pride. I enthusiastically suggest she write more stories. But Kris backs off. Is her gift too personal to reveal now? Too unusual to admit? Perhaps this is the something special inside her, but she's not yet ready to bring it into the world. She inspects my encouragement and concludes, "I prefer not to." To my compromise suggestion that maybe she could do more writing in later studies, she gives reserved assent.

After interviewing a number of human services workers and reading about the field, Kris makes her ambivalence about the "helping professions" more prominently conscious. She likes the idea of being a welfare examiner or probation officer. She's also curious about the people they regulate. She asks "How hard is it to get a good job? There are always openings in the factory." We calculate the monthly budget of a small family living in "decent" poverty, including car and health insurance, and day-care costs, but no entertainment. Then we figure the starting salary of the unskilled labor in the factory where she works. She discovers that even two such incomes wouldn't make it, and Kris, who respects calculation as much as hard work, entertains the notion that the poor may not entirely control their opportunities. Small metamorphoses occur in her responses to experience. How do the migrant laborers she sees buying and drinking on the weekends spend the rest of their time? Where do her tax payments go? We discuss doing a study on her local community.

Kris is increasingly confident that she can learn whatever she sets her mind to. This hasn't happened all at once, or without help. Shortly after she enrolled, I hired a recent graduate — about the same age, one child, lives nearby — to meet occasionally with Kris, to help her revise papers and with other academic discomforts, and especially to help her make and guard study habits in a household where they've never existed. From someone rather like herself but who also lives in my world, Kris learns to be a student. This mediation expands the possibilities of our dialogue. The visits she makes to my office are less and less so many trespasses into alien territory. Kris can bear new ideas without having constantly to nurse academic habits.

I've adjusted several times the content and schedule of our first group of studies to represent and foster the learning which actually occurs. My evaluation for the first group of studies she's completed praises her for having become informed about some history and literature and about human services; I also praise her writing and the implacability with which she pursues her curiosity once it's fixed on something that matters to her. Kris learns the buttons and levers of the academy the same way she learned to operate complicated machinery: when it's clear that each step leads to a goal that matters to her, the difficulty of taking it becomes a worthy challenge. But she's also beginning to savor her curiosity for its own sake; she's learning to wonder.

We devise a second group of studies from issues arising from the first. I had frequently asked Kris to tell me what has aroused her curiosity. Recalling that her own high school education had been dull and remarking that what she was doing now was more interesting, she wants to find out what happens in a classroom. She's especially interested in kids who are having a hard time and whose prospects for good work and prosperity are dim. She's thus found a way to combine her ambivalent desire to help and correct the disadvantaged. We plan an internship in the school near her house. She'll observe and assist in a remedial writing class.

Kris begins the internship. I suggest some categories with which to guide her observations and in which to store them. She's curious about why the kids in the class have difficulty with writing and begins to talk with them. I assign some readings which offer explanations and which might provoke her curiosity farther (Hirsch, *Cultural Literacy;* Kozol, *Illiterate America*). I ask her to propose ways she would work with these students, who seem too consumed with the furies of an economically constricted and socially explosive adolescence to care for the school's requirements any more than they anticipate a fertile, compelling future.

We also plan a study of her village, working outward from her observations and questions toward connections with the larger world. My understanding of history and sociology are too distant to stimulate Kris' curiosity; so we arrange to start from scratch: no books, for now; just defining and answering local questions, about the past and the finances of the village and the local effect of taxes and some state and federal laws. I ask Kris to write questions she has about her village. She asks who paves the streets and clears them of snow. How are those people paid? Why isn't her village part of an older one just on the other side of the railroad tracks? Where do the seasonal workers come from? How much do they make?

She'll keep a research journal on each question, in which she records the answer, how she found it, and how she decided it was reliable. In response to her questions, I pose some of my own, hoping to expand the center and extend the radiating lines of inquiry: Who decides how much tax to collect? How are the tax monies spent? How will it be decided what her child will be required to learn in school? Why can't the police enter her house whenever they wish? Who represents her in the government? How can she make her opinions known to them and acquire information from them?

Kris knows that she'll give birth sometime during the last part of her current studies; so, we've planned a break around the right time. She's finished the internship at the local school, having prepared a clear, precise journal of her activities and thoughts. She's become convinced, citing her observations and reading, that the remedial students will never make the grade until they can read and write about their pre-occupations. She's got a good start on her research into the local community, having become fascinated, for example, that her village (relatively prosperous) grew up "on the wrong side of the tracks" from the now stagnant neighboring town because the residents of the latter didn't want too many day-wage farm laborers and railroad workers living in their midst. She enjoys the historical irony, and begins to articulate the principle that diversity gives birth to prosperity. She's also found out that more of her tax payments go to servicing the federal debt (she now knows what that is and what it has to do with the price she pays for food and clothing) and the defense industry than to funding the food stamps which unemployed farmworkers use. She has a few questions to ask the congressperson and state senator who represent her; and she knows where to find them.

Kris has also begun to invent syntheses of her learning in order to plan more studies. Kozol's book aroused her (especially the costs of ignorance), and the apathetic teenagers in the remedial writing class worry her. She's found out that farm laboring children often don't spend much time at all in school; but she's heard that Literacy Volunteers has a local outreach program for them and their parents. When she re-enrolls, she wants to do an internship in that program and learn something about the migrant community. She now wonders whether they are as silent as she had been until she began to act on her sense that there is something special inside her. She wonders if they're her neighbors. She's also wondering when and how her own ancestors came to America and how the child she's about to bear will grow and learn. We'll study those things too. I wish her well as she leaves the office for the last time before she becomes a parent. She replies, "I'm comfortable here now; I'll be back." Kris has been a college student about nine months. She's acquired the means to exercise and the inclination to savor her curiosity. Both of us are eager to learn what offspring it will bear.

***James Robinson** has been a mentor in political science and history at Empire State's Long Island Center since 1976. His doctoral research at New York University focused on the interrelation of political and administrative reform in New York City in the early 20th century. He has published essays in the* Journal of Health Politics, Policy and Law, *the* Journal of Modern History, *the* Bulletin of Concerned Asian Scholars, *and short fiction in the* Buffalo Spree Magazine. *He is currently writing a novel.*

James Robinson

Twelve Years in the Life: Learning/Teaching/Learning

About a year ago I went to a professional conference in Texas with some colleagues from New York who teach at other colleges around the city. We finished our panels and toured the Dallas/Fort Worth area together, looking silently and in more discomfort than we had anticipated at the Kennedy Memorial. We ended up at the airport too early for our flight home and decided to grab lunch in the cafeteria. As we chatted we drifted into conversation about our work. Someone asked me what working at Empire State College was like.

For a moment I was perplexed, because there seemed too many differences to explain. I tried describing all the different roles a mentor assumes — academic advisor, teacher, field placement coordinator, informal personal counsellor, evaluator of prior learning, academic record-keeper, supervisor of part-time faculty.

Eventually my explanation became so involved that my friend became confused, too. His face expressed first disbelief, then dismay as I spelled out all the different parts of a mentor's job. Finally, I stopped, realizing he couldn't really follow the point of my description any longer.

He put down his coffee and gave me the kind of pitying look I imagine a gentleman reserves for someone who works for a living. "God," he said. "That sounds hard." He had heard my modestly enthusiastic description of my job as a song of woe. My colleague was not primarily interested in teaching, but in research. Teaching was for him, I suspect, the price he paid for being allowed to write and develop his ideas. So the reason for all my activities was obscure to him.

Our conversation served to remind me of the difference between my work and that performed by college faculty elsewhere. He was probably not alone in being unable to fathom what Empire State College is and why it works as it does.

In writing this article, my hope is to capture the distance I have travelled from the academic environment of the large, research-oriented university where I was originally trained. Rather than detail all the aspects of a mentor's work life, I have tried to identify the main lesson my career here has taught me. What I see now is that twelve years in the College have taught me how to teach learning.

*

I began working at Empire State College straight out of graduate school. I arrived fresh from a graduate department that had given me the opportunity of working as a teaching assistant with some fairly talented instructors. My faculty patrons had let me know that I was a pretty good classroom instructor, although a bit wet behind the ears. I was perhaps given an extraordinary training to be a lecturer — my graduate school mentors took the time to make specific assignments and criticized my performance in the classroom when I stood in for them. I was a performer, and I worked hard at my preparations for lectures.

Coming to Empire State was consequently more of a shock than it might have been. In those early days, we were not assigned a faculty "buddy" who looked after our indoctrination. Instead, we were simply exhorted to adapt to the "mentoring role" as it was somewhat obscurely called (I imagined a large Kaiser roll, crusty, seeded and full of air pockets). College workshops explained the program's principles in both grandly general and inanely detailed fashion.

The College, it was explained, was committed to promoting "independent, life-long learning" for our students, and committed to minimizing arbitrary academic requirements based on assumptions about mandatory curricula. On the other hand, one needed to remember how many credits could transfer from an associate's degree done at another institution and whether calculus was considered an advanced-level math subject when adding up a student's program. I struggled for a long time to bring metaphor and procedural detail into harmony, trying to glimpse the reality behind the language.

Much of my real learning about mentoring took place "Live, on the air," usually in the form of impromptu conferences in the hall with a colleague while a bemused student sat waiting in my office. I became adept at ducking out, fetching the right answer and returning. I found students were patient so long as I was honest about my ignorance and correct in my solutions to their problems.

I soon sensed that teaching at Empire State College was (and is) no different from teaching anywhere else. I have responsibility for knowing academic source materials, preparing for meetings with students, reinforcing learning, and evaluating the student's effort. The similarity is only in the abstract, however; the practical matter of how these things are done is quite different from classroom teaching.

First, and most obviously, there is no class and no classroom. Most of our work within the college is done by individualized instruction, one-to-one, in mentor/student conferences. These occur on a weekly or bi-weekly basis, with students receiving guidance for studies which they are expected to pursue independently.

I can see now that it is rather like doing graduate-style teaching with undergraduates. Students and faculty agree on the substance and duration of their work in "contracts" — formal agreements that delimit the nature of the studies to be taken. A series of these contracts constitute a student's curriculum within the college.

The absence of the lecture system also has a profound impact on my work as a mentor. If there are no classes, how does one perform? I had been trained as a stand-up, dramatic classroom lecturer. I paced and postured and paused for emphasis. I made large sweeping gestures. All this seems a little out of place sitting knee-to-knee with a 51-year-old bank manager or a mother of three children (two of whom might also be in the room).

What's more, every hour the student in my office changes, so my audience, far from being constant or well defined as a presence, is constantly in flux. The Socratic method of counter-questioning and probing for assumptions that works so well with one student can be a dismal failure with someone who wants or needs to be told pointedly what is expected. An open discussion of my own views on a historical problem initiates a vigorous debate with some people and only intimidates others.

What I consider my best approach in the morning can turn into a flop by afternoon. It's all right if only a third of a class laughs at a teacher's favorite anecdote; it's harder to bear sober incomprehension in a personal exchange, and the one-to-one format makes more deadly my own temptation to be a crowd-pleaser.

But at the beginning I wondered how many different "individualized" performances a day could I manage? Did adapting to mentoring imply becoming a versatile imposter, a psychological quick-change artist who could throw off youthful glee and feign middle-aged pessimism on demand? I could see myself becoming a veritable Senator Bilbo, crooning persuasively one hour and thundering ominously the next.

In the process of learning my new job I realized I had to shelve the platform posture of performing artist. Too bad, but then again, perhaps not. In limiting my dramaturgy, I gained a better sense of proportion about what I was supposed to do in teaching. I was not there to impress or astonish, or to provoke emotional energy.

I would probably have learned this as I matured as a teacher anywhere. At Empire State I unconsciously absorbed a subtly different point about the meaning of education. Being a mentor rather than a teacher also mean accepting a role that was seemingly more limited: I was to support and facilitate my student's learning rather than transmit my knowledge.

Was this a real distinction? As a lecturer, I had enjoyed engaging students, provoking give and take, reminding them that my opinion was not the ultimate truth. Even then I didn't think I was there to inform them of all they needed to know. But taken away from my platform, how could I be sure I was teaching? How were my students "learning"? How did the educational process really work?

These questions have dogged me for quite some time. Is "guided independent study" teaching? No, and then again, yes. It is not "teaching" in the sense of doing pre-planned preparations for every contact hour, but in the sense of setting up an intellectual structure for the student to use in learning a subject. This involves selecting or suggesting the materials, the focus for study, and the level of performance. It also means critiquing results, coaching, and drawing out implications in a dialogue with my students.

Mentors serve the interest of adults who are presumed (at least theoretically) to know what they need to learn. Coupled with the fact that students are expected to work with mentors to design their own degree programs, this approach to education shifts the center of gravity. Mentors cannot refer to a curriculum that students have to master. Mentors help students identify, understand, and pursue their academic and intellectual needs and interests to the limits of the mentor's competence and the student's ability.

In this mentoring context, the student and I have resources available to us, of course. We can refer to traditional curricula, and we can confer with colleagues inside and outside the institution to get recommendations of a reasonable course of study for the student's goals and experience. Typically, though, relying on such "traditional" advice can lead to a bending in the direction of what is considered "good practice" by professionals in either academic or business arenas, and away from tailoring programs to suit individual student needs. A program in public finance or the social sciences then resembles its more traditional kin. At its worst this can be, I suppose, a surreptitious return to academic requirements, at least in terms of common expectations. But the fact that student and mentor must consider why we are setting up a particular program still leaves the way open to creativity.

As in most creative endeavors, experimentation with student degree programs requires both nerve and sustained effort. We must think through first the student's complex needs and goals and then a coherent academic program to address them. The penalty — and excitement — involved in attempting to design more interesting programs is having to learn more about diverse areas of knowledge. It is impossible to stay within a narrow field of specialized knowledge while encouraging students to jump the fences of academic disciplines. Mentors become, by accident and design, masters of the interdisciplinary hunch. "Speaking as a social scientist, it might work to do this in a business degrees, instead of that . . .."

Do I ever feel the ground opening under my feet? Oh, yes. What are the limits of my competence? For in addition to eliminating the class and the syllabus, Empire State also removed the limits of the academic department. If one believes that education consists of teaching as the delivery of expert knowledge, one needs a clear limiting of subjects and careful division of labor. One job of an academic department is to provide quality control over the offerings of the faculty, by ensuring (more or less) that "everything" that is important in a model curriculum is conveyed to students.

But Empire State was established without departments, and the many implications of that fact took me a little while to comprehend and absorb. Faculty meetings are more like gatherings of a consortium of independent fur traders than the corporate board model I had observed in graduate school. People from different disciplines argue honestly (and sometimes vainly) about fundamental academic issues, often talking past each other from the vantage point of their different disciplines. Does the liberal arts really broaden a student's perspective? How? Is math important for an artist? Fields and specialties do not dictate the course of our debates with one another, or the nature of our work with students.

Over and over we worry at the issue of competence. We reason and rationalize. We have all had bad teachers. Is it worse to have a student "learn" badly? We can also point to brilliant successes, students who, with restraints removed, have written the equivalent of master's theses for four undergraduate credits. We sniff at the reputation of colleges and universities that claim great teachers but permit classroom essays to be marked by graduate assistants, who use their own standards simply to sort them into "A," "B," "C," . . ..

Nevertheless, at times we miss a certain security that departments provide: if the curriculum committee approves a course, one presumably can offer it in good conscience. It then becomes the students' problem to master the course — or fail. At Empire State, however, the student and the mentor are ineluctably bound together by a common interest in making their experience together successful. This is true because the bias in Empire State's culture, backed up by its organizational structure, lies in the direction of responding to the often inchoate and sometimes dramatic needs of our students.

Our students do not always write well, they do not all think clearly, they do not always know how to calculate simple math problems. They can be embarrassed by speaking to people they consider authorities. Some of them lack self-awareness or carry the burden of difficult childhoods which freight them with unbelievable psychological pressures in their adult lives.

Others are vulnerable because they are economically disadvantaged, or have poor self-esteem, and live out (or have abandoned) uncomfortable marriages. On the other hand, they are very bright but with no constructive context, or are so normal you could shake them because they have never taken time or had reason to grow. In short, they are as strikingly and powerfully different from one another as one could imagine. They are like all people are if you see them up close and take half an hour to understand them.

Our students, really, are no different from anyone else's. But the whole workings of this college are calculated to put the individual mentor in front of people who believe (rightly or wrongly) that "their mentor" can understand them and help them get the education they want. When I say they want an education, I mean they want it in the broadest sense. They want the way Saul Bellow's Henderson the Rain King wanted, cosmically. They are going to college to change the terms of their existence as much as to get the piece of paper. We know and they know they want the paper, but for many students there are much easier ways to get it than going to Empire State. They are in my office because the College's literature suggested to them (if it did not actually promise) that someone was finally going to listen, one-on-one, to them.

Our success or failure with our students is based, in large part, on our ability to listen. Why? Because to a great extent we are in no position to dictate to our students. We can not often claim exalted social status, superior virtue, breadth of experience, or even greater expertise. What does a teacher explaining financial markets have to say to a man who runs a bank? Something, but not everything. We are, therefore, if we are reasonably self-aware, impelled to be modest. We are obliged to listen to our students' ideas about their readings because, at least a good portion of the time, their interpretations are as legitimate as ours.

But even without stacking the argument by citing our more able students, the system still works well. Given an entering student with poor academic skills and no college background, but with a spark of motivation, the focus on the student provides a chance for the instructor to listen and learn.

Listening to one's students can be exhilarating and scary. It is a large responsibility, particularly when one hears things one knows the student has not entirely brought into consciousness. It also raises another question of competence, because it opens a much broader territory than the purely academic as a subject for conversation.

If I listen effectively to my students, am I to be a patient sifter of their needs, moods, ambitions and desires? Am I going to be a social caseworker or a lay therapist? Bluntly, what is a "mentor" if he is not simply a teacher? A counselor? An advisor? A friend? Shall I, can I afford to get close to my students? Can I avoid it, one-to-one? Again the feeling in my early day was one of loose gravel under my feet . . . what if you make a mistake in the "affective domain"?

If we have been here any length of time, we have all had to live with this issue. It doesn't go away or, it seems to me, to get any easier. I have recollections of moments of crisis in my students' lives, as my colleagues have: career setbacks, divorce, the deaths of children and spouses, terminal illness. I have also shared student's moments of accomplishment: the winning of elected office, overcoming lack of self-respect, getting into law school, understanding one's estranged child.

My closeness to my students presents a dilemma for me — are mentors there to share their student's experience or just to witness it? In one sense, because of proximity, we are in it, willy-nilly. In another, we still have the clinician's choice — compassionate detachment. I think I have developed over the years an almost automatic habit of calculation that starts to set in when my students share their life experiences with me. I begin thinking, "Do I want this? How much room exists here in this office, and do I still have my share?"

To get too involved is to court disaster. One can know too much about too many people for one's own good — something I was finally forced to admit. The tragedies can hurt, the successes can leave one envious, and either can leave one exhausted.

I suppose the most honest, if the most banal thing to say about this aspect of mentoring is that it is just another dimension within which it is possible to grow in this institution. A mentor can burn out by virtue of being too accessible and achieve a martyred sainthood along the way. Or he/she can strike a compromise, which is what I have done, dipping my toes into deeper water than was good from me now and then, but staying close to the shore. In this arena, there is no one to prove anything to but oneself, I have found.

But the rewards of wading in after a floundering person can be temptingly great. Students' psychological or personal issues affect their learning, and mentors can see it clearly, one-to-one. Students cannot get through a profitable discussion of a book if they are loaded with fear or anger or resentment. I have developed a kind of repertoire of almost unconscious techniques for dealing with the emotional baggage my students usually bring to our sessions.

Most of my tricks consist of trying to get immediate tensions to the surface, to recognize them and set them to one side. Sometimes these anxieties are connected to an issue related to the difficulties raised by their work, but often they are not. They are simply noise on our channel of communication that need to be reduced. I suspect most mentors do this work automatically.

In treating the student as a whole person, I have come to respect the things that keep us from learning and take them seriously as questions to be discussed directly with students. What kinds of habits get in the way of studying? Does the family or employer support their being in school and, if not, what can be done about it?

I also treat our purely academic discussions differently. I find it is important to be prepared to go further with students than their assignment has demanded, and that it is equally important to be prepared to move in reverse. Rather than offering more, it is sometimes necessary to work harder on less — after finding out that some basic elements have not really been understood.

I often find myself more concerned about hearing what the student said, less fixed on the significance of my own thoughts about the material. It isn't that a mentor can afford to abandon his/her command of the readings — I have had a few humiliating experiences that stemmed from recklessly assuming that I knew (and remembered) everything about certain works. But the shift is definitely there, a subtle move away from the demonstration of my learning towards an evaluation of the student's.

Adult students' lives contain within them all the raw material one would ever need to run a school. They have had their lessons of economics, history, law, and even poetry; but they often lack anything other than a personal context in which to place them. Consequently, my students find it hard to express and evaluate what they know, and feel uncomfortable trying to communicate to the larger world. In the best and broadest sense, they need a tradition. But I have learned as much as possible to build my contracts on my students' inner goals, not on my own ideas.

Perhaps it is our earliest experiences that finally shape us. When I was a child I used to hold tools for my father as he worked in his shop. I always like to help, but sometimes I did a lot of watching instead. I couldn't think of anything more depressing than watching someone else work and adding nothing of my own. My best memories were of the times when my teachers, including my father, gave me tools and allowed me to use them. That was always the mark of good teaching for me.

At Empire State I have found I am not so concerned with whether students grasp my ideas as with whether they can identify and manipulate their own to make their views and values clear. With classroom performance — theirs and mine — eliminated as the criterion for judging whether learning is going on, I can see more clearly whether my students have anything meaningful to say.

I do not so much evaluate their capacity to understand my ideas or those of the text, but rather judge their ability to make sense of their ideas in conversation and writing. I realize that the words that have crept into my stated evaluative criteria have real significance: I want students to be able to articulate what *they have learned* in a "coherent, clear, original and factually accurate" fashion.

Each of those concepts — coherence, clarity, originality and accuracy — represent a hard-won understanding of my role as a mentor. I can expect work that might not be any of this, and it is my job to provide students with an understanding of these goals and the means to accomplish them. I have to work to make it possible for my students to be "coherent" or "original" when this had never been made an operative value for them in previous academic work. I have had students who have no idea that they had basically never done original work, or who had passed whole levels of study in local colleges without writing coherently.

These broad goals are pursued in the context of a curriculum which, even though chosen in a collaborative process between student and mentor, still has a clear content base. If students choose to study American government, they need to know American government. If they don't learn what they choose to study, I tell them so. Evaluation becomes personal and occasionally painful. That is true because the evaluation process cuts both ways: I am not only seeing what my student hasn't learned, I am seeing where I have failed to make it possible for him or her to learn it.

Ultimately, I suppose, the question of competence as a personal question has answered itself. My students seem to enjoy working with me and increasingly meet both their goals and mine. I have learned to evaluate my performance by being supportive of theirs. I have begun to define success as an effective collaboration between myself and my students, with the larger responsibility mine. I have let go of my fear that I would not be able to recognize quality in my student's work.

The path of my career in mentoring can be described as a "recursive" activity, a process that returns over and over to its starting point at (I hope) a higher plane. I learned how to mentor by being put in a situation in which I was unable, in the classic sense, to "teach." Once in the mentoring system, I had to discover how to foster the discovery of knowledge on the part of my students. I was not going to teach; therefore, I had to examine how and why I learned, and teach that to my students instead: I was learning/teaching/learning.

Kathleen Eckett *received her B.A. from Empire State in May of 1988. Her career in nursing evoked a desire to understand some of the philsophical and ethical dilemmas in human experience. Through a degree program concentrating on the creative process, Kathleen was able to combine studies in the visual and verbal arts and psychology to understand more fully the capacities and limitations of human expression and relatedness.*

Kathleen Eckett

Kathleen Eckett here explores her experience studying poetry and the creative process. The reader can imagine the poetry mentor bending toward the student at the last meeting of the learning contract, probing for an answer: "And what did you learn?" The complex reply in the poem "Contract Conclusion or And What Did You . . ." suggests how little of the truth can be stated simply when a mentor asks such a question. After days of playing with words and pursuing elusive impulses, the poet here yields us the multifaceted learning that all ardent students discover as they face the demands and exhilaration of discipline, energy, time, disapproval, limits and achievement. And "Slipping Up On The Creative Process" will resonate with any student who has scrambled after an idea on the edge of consciousness, just on the other side of sleep. With wry irony, this poem, written during a summer contract on Creativity, crystallizes the poet's experience of doing the impossible: using words to elicit indescribable mysteries, expressing unarticulated ideas, transforming them into art.

Wendy Goulston

Contract Conclusion
or
And What Did You . . .

i learned
it takes time,
a great deal of it too,
hours of effort, wooing the words,
open-ended time
to hear each click

as the tumblers turn
dropping phrases dutifully
into their proper (most pleasing) places,
time for discipline to develop
needing energy to uncover
lines lean with living,
looking with an exacting eye
unhurried, steadfast

i learned
one needs patience for prose,
watching and writing while ever at the mercy
of a cared-for word
or idolatrous image,
whether captured in the quiet night,
or just another afternoon
as sun-filled hours lengthen
toward evening's silent shadows,
both calm in the clatter
of timeless type tapping

i learned
a prompt response to my mute voice
never knowing when the words will want me,
caught often unaware in time past
thinking, surely
as i slipped into slumber
this line won't leave me,
but rather return
in some better seen state,
wiser now, as i hasten to heed
this elusive inner emissary,
scurrying to scribble solidly
my imaginations efforts

i learned
friends fret, finding fault
with the tonnage of time
devoted, desire, devoured

by something other than them,
the need to work with words
taking too much time,
and so much solitude

i learned
mentors aren't magic
but maybe more,
a hugely human help
earthbound earnest,
siding with acceptance
and encouraging by example
to inspire in understanding,
no sorceror could shine
a more luminous light
to interpret the lines,
only another who also carries
consuming queries
to conceal or reveal

i learned
sometimes poems can be purgatory,
trapping one in the terror
of never finished, never knowing,
a suspended state
of sole indecision,
now to choose-
which word is worthy,
seeking ever to abate
this aphasic agony,
stretching out the senses
to soar over and away
far above the images,
gathering them gratefully
as they group in greedy clumps,
excited, exhausted, exhilarated
knowing that i trust them
to mirror my mind,
carrying a message
from me to you

Slipping Up on the Creative Process

early morning, late-August cool
too early — barely 5:30.
Bleached light leaks
around gently swaying shades
against old, enamelled wood
crocheted-white pullrings
rhythmically tap out
their muted, evocative melody.
a somber, end-of-summer sound

in this half-wake
a line comes angling,
dragging me slowly
reeling me skillfully,
against my struggle
up from slumber's safety

so tired,   too tired
it pokes,   it prods
goading me over
the mattress edge,
luring me along
like a wisp of smoke
heading for some flat horizon
this line   insistent
this line   demanding,
swelling with life
in my moments of reverie,
leads me
like a Judas goat
to paper lined
with fine veins of blue,
white and undeveloped
like the subtle summer dawn

on the edge of insight
an endless expanse
I stare down into,
like a moment of chance,
conjuring images of luck
and yes,   winning

like the hapless dupe
who pauses
imagination caught, spirit snagged
stopping on the fiery city sidewalk
to bet the rent money
on that certain shell,
the   sure   thing

like the line that lurks
looking over my shoulder
laughing as I lose —
my shell silent,
no crashing waves
no winning ways

here   now   only
an impression
invisible imprint,
feeling its pressure
its form not seen,
yet mindful of its sense
like some whisper
I'm struggling to hear,
leaning far out
into untouched territory

so this is where
it sometimes starts
she questions,
in sleep's silent chamber,
some visitation
by a wandering word

or lost line —
errant, energetic
needing to be heard,
when at first
only felt

tantalizing
almost transparent,
shifting my gaze
to glance at an angle
that will be I hope
properly oblique,
smart enough
          sly enough
                    right enough,
to catch
the wavering glimmer
that my sense shows   as signal

sight and sound
I must provide
with structure and form
for others to feel,
this,   tricky transaction,
like transferring water
in hands cupped,
two palms full
of gleaming promise,
for lips parched
from words struggled   to speak

I know these drops
don't disappear
as they fall,   dripping from
imperfect architecture,
a simple human join
basic, organic, shared
with lines   long and short,
in all,   difficult to read

so I curl them round
the wise and worldly words,
who claim   to read maps
who claim   to know mysteries,
who promise   aid in all efforts
to pursue the unknown,
through a process as secret
as what lies concealed

***Sharon Villines** is a mentor in the Metropolitan Regional Center. She is a painter, exhibits at SOHO 20 Gallery, and has been through the trials and tribulations of which she writes. After receiving her MFA from the University of Illinois, she worked in the fields of mental health, social reform, religious studies and meditation, and family life. She is currently focusing on the economic and isolationist realities of being a painter.*

Sharon Villines

The Education of Artists Without Classrooms

When I explain what I do as a faculty member at Empire State College, the first response is invariably, "But it's impossible to teach art without classrooms! No studios?"

Not only is it possible, it is the reason I chose to teach in a nontraditional program. I had been working as an artist and had had no contact with academia since leaving graduate school. I planned on none. My own academic experience had not been positive, and it had taken me several years after graduating with an MFA to begin working as an artist again. Empire State attracted me because it was community based and individualized. As an artist I prized the privacy of the studio and the control it provided over my environment and work schedule, so the concept of educating artists in their own environment seemed sensible and productive. I set about doing it with no example to work from except the practicalities of the situation. The College assumed it could be done, and I had too many students to consider the question further.

From 1973 to 1979, while I was based in upstate New York, my students fell into three categories — practicing artists in their mid-twenties and thirties who wanted to teach, attend graduate school, enrich their resumes, or expand their education; younger students who had dropped out of traditional institutions for political or academic reasons and wanted a personalized education; and older students — women who had raised their last child or men who were preparing for retirement — who had missed an education or wanted to follow their dreams or upgrade hobbies into full-time study. They were painters, sculptors, printmakers, ceramists, art therapists, weavers, photographers, and museum or historical society volunteers. Since 1979, when I changed my base to New York City, my students have generally been younger — primarily in their mid-twenties and early thirties — and more focused on professional practice.

To say that I teach without studios is not entirely accurate. I do not work with school studios, with institutionally defined space. I work with a student's space. This means that one of the first learning activities for students who are not established as artists is creating a studio or work area and developing regular work habits within the demands of everyday life. My objective is to teach students that an artist's life revolves around studio space and schedule and not the reverse. Because creative activity is often unpaid and not recognized as work, artists try to add creative work on top of schedules filled by the economic and social demands of busy lives. Usually what this means is that their creative activity waits "until there is time" or "enough space." The earlier they learn there will never be time or space unless it is consciously created, the earlier they become productive.

Even experienced artists express a need for help in this area. They want to get more "organized," "focused," "serious," "directed," "involved." It is this need, in fact, that prompts them to return to college more often than a desire to acquire skills or additional techniques. Together we work out solutions. Chris stopped working the lunch shift as a waiter because she found herself working afternoons and socializing all evening. She now supports a studio, herself, and her education by working twelve-hour shifts on weekends. She sleeps Mondays to recover and paints Tuesday through Friday. Her economic support is stable and her work as an artist productive. She socializes on the job and one or two evenings and still has four days to paint. Steve supports himself by doing caricatures at conventions and on street corners during the summer and paints all winter. Because he seemed to have unlimited time, he too easily became lazy and needed to develop the discipline to work on his winter schedule. Alice needed to figure out how to get to work. She had no economic or family pressures but just never got to the studio area in her basement. She began by taking her morning coffee down there "just to sit," and in minutes she would be painting. Jim, a landscape painter, hadn't been able to "get started" alone, needed others to share resources of car and gas for drives into the country, and "painting groups" had not proven "serious enough." He organized a list of people he could call one at a time to go to the country several mornings a week to paint.

These may seem simple, obvious solutions, but individual students working out plans that fit their lives and temperaments need advice and support until creative work schedules become a natural part of their lives. Solutions about work space are equally crucial. Students need to learn that their art work must have a physical presence in their lives and not be hidden under the bed, in the back of the closet or the corner of an unheated garage.

Advanced students, artists who have been working productively, find returning to the classroom interrupts their focus and concentration. They have to stop working in order to study. A program designed to work with them in their studios creates no disruption and builds on their strengths. Students at traditional colleges also often find their work interrupted when they graduate and have to adjust to changes in schedule, supportive networks, geographical location, and economic demands. At Empire State, graduates continue their work because it is already well grounded in their space, time, schedule, and objectives. They confront and resolve these problems as students, not just for now but for a future when changes in economic conditions and living situations may lead to disruptive periods. My objective for them is that when they graduate they don't notice. They are working so independently and regularly they just continue.

Though a student's need for support and focus is often the first expressed, it is usually caused by deeper problems with clarification of personal artistic goals. Establishing schedules, experiencing the benefits of working regularly, and understanding that there is more to art than inspiration is important, especially for younger students, but maintaining those goals is deceptively difficult. To stick to their schedules, students must gain the courage and strength that comes from developing clarity about the nature of their work, from defining and focusing their interests as artists, and from experiencing the exhilaration that comes with discovering an idea or image that fully engages and challenges their curiosity and ability. Bringing students to the discovery of a deeper personal involvement with ideas about art is the goal of my teaching and this process determines the nature of a student's study with me. Perhaps it is more accurate to say that it determines the nature of my study with them — I often have the clearer objective.

Students are not all aware of the nature or possibilities of creative activity when they begin, and not all achieve it. In the end, what is essential and what ultimately forms the basis for an artist's work is the depth, complexity, clarity, and originality of the artist's perception and expression of his or her experience. Unlike traditional institutions, where the established curriculum, course plans, and class times would predetermine or interfere with the student's process of discovery, a program without a predetermined structure allows the development of an environment which is structured around the student's perceptions, their development and expression. It allows education to be matched with the accomplishments of the student, to be individualized to accommodate both beginning and professionally experienced students.

Since my initial rejection of the classroom, I have become more respectful of the stimulation provided by peer interaction and more understanding of the economies of technical training and skill development through group instruction. Students who lack basic skills, who have no vocabulary with which to form questions about art, need the enriched environments provided by classrooms and peers. The controlled environment of a residential campus may also allow students to be exposed to a quality of thinking not always available in the community. Despite the other advantages of Empire State, there are many days I would like to avoid explaining why paintings in shopping malls are not the best models. Students in classrooms next to galleries of carefully chosen paintings probably would never ask these questions, yet they still might harbor a suspicion that barn boards with daisies represent the "real world" of art.

Students can be led to acquire taste through study and visits to galleries, but the acquisition of technical skills is perhaps the most difficult area in working with students who are essentially "loose in the streets." Materials and techniques are as important to the artist as words are to a writer, and technical proficiency is an integral part of the student's education. It is not something which happens first or later; it is part of the form of the experience.

Because students can learn not only from their own efforts but from the ideas, mistakes, problems, and questions of other students, group instruction seems to be the best context for most students to gain technical training. Yet in recent years, the technological explosion of materials and processes has lead to the domination of technical training in art departments. Traditional departments compete through new facilities, machines, equipment, and the number of technical subject areas they offer — We have much more darkroom time. We have just as many presses and larger. We are building a major new sculpture facility this year. These campuses attract excellent students and faculty, and their use by guest artists has produced wonderful work in print series and sculpture. Education about the capabilities of such equipment is important. But when students graduate, they will lose access to it unless they themselves can become faculty members or guest artists. Without the technical requirements and distractions of equipment, the student is also freer to focus on questions dealing with image and intention. Why am I doing this? What am I doing? These are essential questions.

In the blank, empty space of one's own studio, the artist is not sustained by group interaction of the kind provided in the work environments of corporations or universities. Artists need to learn to function independently, to be physically, emotionally, and intellectually self sustaining. Unless a student has developed his or her particular relationship to the discipline and to a community of artists, he or she will stop working and will feel like a failure. Responsibility for this failure lies not with the student, but with an educational system that fails to help art students gain direction and self sufficiency.

Often it is the excellent student who needs to be confronted with discovering and defining his or her own creative questions and problems. Too often facility with materials and the ability to discern "proper" solutions to problems presented in classrooms disguise a dependence on technical skill and externally defined questions. Less "talented" students, those who have greater difficulty solving such problems, are more challenged by them. But students with technical facility find it easy to go to class one week and do a figure, the next week a color field, and the next a still life — and they will do them beautifully. But often that student does not understand the reasoning behind the problem assigned. He or she simply solves the problem, in many instances unconsciously. If the instructor questions the work in order to demonstrate a point about the reasoning behind the assignment, the student may even think the instructor is attacking or criticizing the work unfairly.

Many of my students, even those who have been out of school for several years, have retained the "problems" assigned by a favorite instructor, repeating them with variations. Or they may have continued classes once or twice a month to pick up ideas for their work. These activities may allow students to stay productive, but they also allow them to avoid having to confront the basic question about why they create — why they make images. When they begin studying at Empire State, it generally takes only a few weeks alone in the studio before they "run out of material" and realize something is wrong. When I begin to ask "why," often I am attacked for giving too little guidance, too little inspiration. I am too demanding. Too restrictive. Then I ask, what will inspire you. What do you care about? What is important? Because I had made a point of being unrestrictive, of accepting of any direction a student wished to take as long as he or she could explain why, I have placed the student in the center of a very difficult process.

Expecting to repeat their previous educational experiences, most students are surprised by this. Their anticipation is that I will tell them what to do or will accept the validity of what they have been doing since that is what their last instructor told them to do. When it is clear that I am not going to do that, they fear that I expect a comprehensively defined "important" answer. The response students are usually capable of giving may be as simple as "I like the color blue," or a slightly more complex, "light patterns." Other times they may conceptually relate what they are doing to art history, social issues or politics. In order to give them examples of what I am looking for, I may respond by discussing art history in terms of an artist's interests rather than the historical significance of the work. Because art history texts discuss art after the fact, after the work has been studied and its significance established, I will suggest that students read biographies of artists because there they will find descriptions of individual artists' personal struggles to solve problems, struggles they can relate to their own confusion and uncertainty.

Individualized instruction does not always mean that the content of learning is different — students at this level are often not doing original or unique work — but that students respond to the learning personally. What is important is the student's ability to develop and resolve an image or idea which is of essential interest to the student, however derivative it may be. Those who explore ideas with a sense of personal involvement move quickly to the production of original work and are likely to continue working as artists. For the very gifted student, this happens with quickness and intensity; for others it happens only superficially, and changes in their work are generally based on the demands of the instructor. But when the educational process requires a student to internalize and respond to ideas — even derivative ideas — in authentic and unexpected ways, they become part of the student's development and provide a basis for further unique exploration.

Confronting the questions art poses is a difficult experience. The confrontation and the solutions occur in situations where one is concentrated, focused, intent. Usually this occurs in private or, if in groups, among artists with similar goals, disciplined from long hours of work together, as in dance companies, or from shared discussions and ideas over a period of time. It, does not happen in random groups of students presented with important but impersonal problems or tasks.

The more difficult the question, the more necessary and the more difficult for students to handle in a group situation.Students often experience anxiety and denial when asked to defend or explain their ideas. Mental confusion and self-doubt can result in feelings of personal failure and abandonment of creative efforts. Working with students individually allows me to be more aware of the student's concerns, to discuss them without exposing them to other students, and to reassure the student that these feelings are part of the creative process.

The advantage of a community-based and individualized educational program is that it teaches the student to be an artist in his or her own environment. An essential part of that education becomes how to function alone in one's own studio. It requires the student to form questions which are relevant to that environment and his or her place in it. These questions — social, political, or formal — are still relevant to the student once he or she is away from the institution and the teacher with whom they were developed. For the student who has already begun that process, individualized education supports instead of interrupts creative activity. In the final analysis, teaching art without classrooms, without institutionally defined studio space, benefits both student and teacher by forcing us to find ways to bridge the gaps between instruction, creative work, and the real world.

Sarah Gallagher *holds a Ph.D. in English from the State University of New York at Buffalo. She wrote her dissertation on Virgina Woolf's theory of biography and has continued to be interested in the narrative structures people use to recount their own and others' lives. She taught at Empire State College for fourteen years and now lives in Maine.*

Sarah Gallagher

Finding Yourself at Forty: Autobiographies for Adults

Going away to college to "find yourself" has always been one of the prerogatives available to traditional late-adolescent college students. But the search for self, as recent studies in adult development have shown, is not a phenomenon limited to younger college students. Such studies as Carol Gilligan's *In a Different Voice*, Gail Sheehy's *Passages*, Daniel Levinson's *The Seasons of a Man's Life*, and George Vaillant's *Adaptation to Life*, all testify to the fact that the self, once discovered in adolescence, must be re-discovered in adulthood.[1]

Yet self-discovery does not come easily to adult students. Many adult students regard themselves with skepticism, something adolescents rarely turn on themselves. Adults can see life's ironies, and the distance between expectations and achievements. Though many adult students do not realize it, they have often constructed their understanding of their own life events in novelistic terms, sometimes using fictional devices to chart their course. They assume, often without realizing it, that there is a properly sequenced narrative structure to everyday experience, and characterize life's "typical" and "normal" narrative structure as one that progresses doggedly forward — what historians call the "historically optimistic" narrative — with each episode leading to a higher stage of development, from birth to childhood, high school, college, work, marriage, parenthood. Adults who return to college, however, are often in a crisis. A divorce or separation, a domestic upheaval or a problem on the job, may prompt them to return to school. When they explain themselves, they speak of doing things "backwards," "out of order," or "too late," and see their own lives as "messy," lived in discontinuous narrative episodes rather than a progressive movement from one higher stage to the next. They believe that they have disrupted the "correct" narrative structure of experience.

---

[1] Also see Bernice Fisher, "Wandering in the Wilderness: The Search for Women Role Models." *Signs* 13, 2 (Winter 1988): 211-233.

In studying the autobiography, older students can see that lives are not always earnest, fully explainable, and neatly purposeful. Many returning women students can see their personal struggles reflected in Lillian Hellman's *An Unfinished Woman* or in Sally Kempton's autobiographical essay, "Cutting Loose." Middle-management executives can trace some of their own preoccupations in such works as Alfred P. Sloan's *My Years with General Motors* or Lee Iacocca's similar automotive *Bildungsroman*. In studying autobiographies, in which other adults have tried to reconstruct their own metaphors of self, older college students can often find new narrative structures for experience and new alternative "plots," ones that more closely match their own understanding of their lives.

There are two books on autobiography that I have found particularly useful in my work with adult students. One is Robert Lyons' *Autobiography: A Reader for Writers*, a rich and entertaining compendium of autobiographical excerpts. Lyons' book contains excerpts from autobiographies by Lorraine Hansberry, Frank O'Connor, Margaret Bourke-White, Edmund Wilson, Joyce Maynard, Piri Thomas, Isadora Duncan and others. Though the Lyons anthology contains little information on the theory of autobiography, it does contain good introductory material that discusses such things as the importance of self-questioning for the autobiographical writer and suggestions for organizing the description and detail that inform the autobiography.

An even better collection, however, is *The Voice Within: Reading and Writing Autobiography*, by Roger Porter and Howard Wolf, which is now unfortunately out of print. Porter and Wolf's collection treats the process of writing an autobiography as an epistemological problem — a treatment that older students, with their own special brand of skepticism, find compelling. While Robert Lyons treats autobiography as "essentially the story of a writer's life as he has acted it," Porter and Wolf deal with important theoretical questions that Lyons ignores. How, for example, is it possible to reconstruct an honest, ordered account of a life from fragments of events, re-arranged by memory? How is the perspective of the writer, setting down a carefully crafted account of an event, different from the perspective of the inner self, which may recall the event very differently? How do our views of ourselves, and our own ways of reconstructing and remembering events, differ from the memories and accounts of others? This collection, which deals with some of the classic questions of autobiographical theory raised by Roy Pascal in *Design and Truth in Autobiography* and by other more recent theorists, has special appeal to older students. Most older students have confronted many of these same questions in other guises, and may have already tried to work out the narrative structures of their lives — though not perhaps on paper. Furthermore, older students are not naive about the truth-value of the texts they study, and for them, questions about how people know what they know have a real resonance. Porter and Wolf's book was shaped by the turbulence of the sixties — it has a decided "sixties" flavor — yet many of the questions it poses about the process of uncovering the self are questions which have a new and vibrant meaning to adult students. Ironically, many of the issues and dilemmas many adult students may have rejected as facile and frivolous in the sixties and seventies have now returned to preoccupy their own search for self in the eighties.

In a further effort to direct students' attention to some of the theoretical and epistemological concerns Porter and Wolf have raised, I have also assigned one of the classic studies on autobiographical theory, Roy Pascal's *Design and Truth in Autobiography*. This book is also out of print, and is not available in a text edition, so students have had to obtain it through local or college libraries. Many students have been beguiled by Pascal's discussion of autobiography, and though they have found the book to be challenging, they find the questions he raises highly engaging and pertinent to their own lives. Pascal discusses such issues as how a writer sifts through the grab-bag of memory to extract an important event, how he or she shapes a narrative to reveal the event's importance, and how a writer, in dealing with the vicissitudes of memory, can claim to write anything that is "factual." In studying these sorts of theoretical questions, many older students see for the first time that texts are *shaped* — that a writer makes conscious, and often unconscious, choices about what he or she puts on the page, and that each text — whether fictional or autobiographical — embodies certain literary modes and conventions that shape a reader's response.

Getting students to see ways in which texts are shaped by the writer allows students to look at literature as a collection of human documents, not as an assortment of antiquated parables that one must pretend to like. In studying the autobiography, which has as its focus the events of an actual human life, students can see the commemorative and historical function of literature, and can see that literature acts as a preserver, and is a record of human values, hopes, ambitions and despairs. Literature ceases to be a subject that was once looked upon as a painful part of "cultural enrichment." Instead, literature becomes re-connected with the larger issues and events of human existence.

The metaphors of autobiography — and the ways in which writers have selected images and figures to represent the self — fascinate older students. How one locates oneself in history, in a landscape or region, in one's intersections with others, and how one transmits those understandings through writing, are often appealing to older students, who see themselves as having more "history" to write about that their younger counterparts. The methods writers use to organize their accounts — Lillian Hellman's effort to imitate the discontinuous, episodic quality of memory, Alfred Kazin's use of the space of the city to define himself, Richard Nixon's definition of life as a landscape marked by peaks of crisis — can be pursued by studying specific texts in detail. Some of the autobiographies that have been special favorites with my older students are, *An Unfinished Woman* by Lillian Hellman, *Black Boy* by Richard Wright, *Stop-Time* by Frank Conroy, *I Know Why the Caged Bird Sings* by Maya Angelou, *Down and Out in Paris and London* by George Orwell, *Father and Son* by Edmund Gosse and *My Life by Isadora Duncan*. Some students have also enjoyed Margaret Mead's *Blackberry Winter*, though many of them, especially women, have pointed out that Mead omits many details about her domestic life that would, if they were told, lend an augmented sense of realism to the work. In addition to these texts, I have also used two anthologies of writings by women, which were both well received. One is Charlotte Painter and Mary Jane Moffatt's *Revelations: Diaires of Women*, which includes excerpts of diaries of women ranging from Sophie Tolstoy to George Sand. The other volume is *Growing up Female in America*, edited by Eve Merriam, which contains excerpts from diaries, letters and journals ranging from Eliza Southgate's description of herself as a schoolgirl in Scarborough, Maine in the early seventeenth-century, to Mountain Wolf Woman's somber description of widowhood in 1936. All of these texts have been useful in sharing with students the rich possibilities of the form of autobiography, and in enabling adult students to find self-confirmation and discover that their personal quandaries — conflicts about their work, their children and parents, and their previous schooling — are problems they share with others.

Studying what autobiographies include — and Margaret Mead's *Blackberry Winter* is an interesting case — as well as speculating about what autobiorgraphers leave out, can be an interesting way to trace innovations in the genre. Reading autobiographies that pre-date the contemporary ones I've listed can be rewarding to older students who often tend to read literature as history, and may wish to look at the autobiography as a historical document. In an article in *Boston University Journal*, Partricia Meyer Spacks, for instance, has looked at the treatment of various themes and periods in autobiography and has suggested a number of ideas that might be useful in organizing a course of study.[1]

Spacks studies a number of autobiographies beginning with those of the eighteenth century and shows how various philosophical and psychological theories have shaped the autobiographer's concerns. For example, Spacks points out that, as a result of the eighteenth century's fascination with maturity — and specifically the influence of Locke's idea of the mind as a blank tablet filled by accumulated experience — growth toward manhood seemed highly desirable, and as a result, descriptions of childhood in eighteen-century autobiography are sharply truncated.

In the nineteenth century the focus shifts. Nineteenth century autobiographies reflect the influence of Rousseau's belief in childhood as the happiest time of life. As Spacks puts it, Rousseau's doctrine "encouraged adult nostalgia for vanished bliss." Spacks points out that Ruskin's and Spencer's autobiographies both convey a sense of the self's particular uniqueness in childhood, though Ruskin pictures his childhood as blissful and Spencer pictures his as anguished. Spacks concludes that "a century ago, men and women alike perceived their experience in relation to an ideal form of human development in which the best comes first."

---

[1] Spacks, Patricia Meyer. "Stages of Self: Notes on Autobiography and the Life Cycle." *Boston University Journal* 25, 2: 7-17.

In the twentieth-century autobiography, Spacks argues that the emphasis again changes. As a result of Freud's awakening us to our too-naive faith in the innocence of childhood, the myth of selfhood centers on adolescence. Spacks points out that in the twentieth century more and more people write autogiographies, and more and more people write them at an early age. Many autobiographies — among them some of those I've already mentioned: Maya Angelou's *I Know Why the Caged Bird Sings*, Frank Conroy's *Stop-Time* and Mary McCarthy's *Memories of a Catholic Girlhood* — end with adolescence, which becomes a kind of crescendo of experience.

Spacks raises an interesting question, one particularly fascinating in the context of a discussion of autobiography and the adult student — Why, in the twentieth century, is the vision of the self in adolescence the one we so much admire? Spacks concludes that to locate power and pleasure in adolescence, and to make adolescence the crucial experience for the twentieth-century autogiographer, suggests a reconciliation between the eighteenth and nineteenth century views of human development. Spacks argues that in twentieth-century literature we have by no means returned to the eighteenth-century idea that fulfillment is measured in terms of worldly success. Yet she points out that, in celebrating adolescence, we are celebrating the power to imagine uncomprised activity in the world, to imagine changing the world to make it conform to our personal visions. It is this vision of uncompromised possibility that explains the allure of adolescence, as recollected through the lens of adulthood, in the twentieth-century autobiography.

Perhaps it is this observation that makes the study of twentieth-century autobiography so poignant, and so richly rewarding, to the adult student. Adult students seek change. Returning to college to rediscover a new self — and one very different from the adolescent self — is, for many older college students, an equally turbulent passage to selfhood. Adult students' doubts about their abilities to pursue their studies successfully, to control and contain the domestic discontents that have prompted, or may result from, their return to college, are not unlike the rites of passage described in *Stop-Time, I Know Why the Caged Bird Sings*, and *Memories of a Catholic Girlhood*. Spacks points out that the celebration and struggles of adolescence that color these three autobiographies are also present in a great many other twentieth-century autobiographies, including autobiographical records by black writers, such as Ann Moody's *Coming of Age in Mississippi* and *The Autobiography of Malcolm X*. In their celebration of life's possibilities for imagining change, these autobiographies mirror the concerns of adult students, who want to return to school to change their lives, to equip themselves with the skills to enable them to effect change in the world, and frequently, to move from positions of relative powerlessness to a new stage of maturity.

Spack's article provokes some insights about the value of studying autobiography for the adult student. A discussion of the use of metaphors of adolescence in the twentieth-century autobiography, and similarities to the rite of passage the older student faces in returning to college, can be a confirming experience for adults. College re-entry, at whatever age, can be a disorienting process, and the experience of studying similar patterns of alienation and anxiety in twentieth-century autobiography can provide validation and direction.

In addition to the benefits to be derived from reading autobiographies, the experience of writing autobiographical accounts can be similarly valuable to the returning college student. Many adults are tentative about making the bridge between their own previous life and work experience and their academic studies. They often see their intellectual and emotional needs as highly idiosyncratic, and see themselves as exiled from essential parts of academic life. Studying the autobiography, and encouraging students to write about their own lives, fosters a sense that, in their new academic ventures, there is an explicit place for their own affirmed sense of self.

Too often returning college students approach the idea of writing anything — on any subject — with terror. Writing about a subject, however, in which adult students can assert their own authority — for no one else knows more about the events of their lives than they do — sometimes counteracts the trepidation older students feel when setting ideas on paper. For many students, the experience can be vivid and compelling. A number of my students have told me that they had always wished for a chance to keep a journal, or to sort out the events of their lives by writing an autobiography, but the pressures of daily life pushed this opportunity out of reach. An opportunity to lavish attention on themselves, in the midst of a busy work routine or the stresses of family life, is a gratifying experience for many adult students. In their own writing, they can experiment in finding answers to some of the theoretical questions they pursue in reading autobiographies: How can a writer separate the important, formative life experiences from the trivial mundane ones, and shape a narrative account that will reveal the significance of the major events? Are the important crescendoes of a life, recollected at the age of 40, different from the crescendoes recollected at the age of 30? How do landscape and family history contribute to a sense of self?

Too often we take the "maturity" of the adult student for granted, and fail to recognize the terrors of adults reentering college at the same time their children are being sent off to "find themselves." Studying the autobiography can be an opportunity to confront the anxieties of re-entry, to deal out in the open with the pressures of coming back, and can assist students in discovering an enhanced sense of the possibilities of studies in writing and literature, at the same time they re-discover new visions an interpretations of themselves.

References

Angelou, Maya. *I Know Why the Caged Bird Sings.* New York: Random House, 1969.

Conroy, Frank. *Stop-Time.* New York: Penguin, 1977.

Duncan, Isadora. *My Life.* New York: Garden City Publishing Company, 1927.

Gilligan, Carol. *In a Different Voice.* Cambridge: Harvard University Press, 1982.

Gosse, Edmund. *Father and Son.* New York: Scribner's, 1908.

Hellman, Lillian. *An Unfinished Woman.* Boston: Little, Brown, 1979.

Iacocca, Lee, and William Novak. *Iacocca: An Autobiography.* New York: Bantam, 1984.

Levinson, Daniel. *The Seasons of a Man's Life.* New York: Knopf, 1978.

Lyons, Robert. *Autobiography: A Reader for Writers.* Second edition. New York: Oxford University Press, 1984.

McCarthy, Mary. *Memories of a Catholic Girlhood.* New York: Harcourt, Brace, Jovanovich, 1957.

Mead, Margaret. *Blackberry Winter.* New York: Morrow, 1972.

Merriam, Eve, ed. *Ten Lives: Growing Up Female in America.* Boston: Beacon Press, 1987.

Orwell, George. *Down and Out in Paris and London.* New York: Harcourt, Brace, 1959.

Painter, Charlotte, and Mary Jane Moffatt. *Revelations: Diaries of Women.* New York: Random House, 1975.

Pascal, Roy. *Design and Truth in Autobiography.* Cambridge: Harvard University Press, 1960.

Porter, Roger, and Howard Wolf. *The Voice Within: Reading and Writing Autobiography.* New York: Knopf, 1973.

Sheehy, Gail. *Passages.* New York: E. P. Dutton, 1976.

Sloan, Alfred P. *My Years with General Motors.* Edited by John MacDonald with Catharine Stevens. Garden City: Doubleday, 1972.

Vaillant, George. *Adaptation to Life.* New York: Little, Brown, 1977.

Wright, Richard. *Black Boy.* New York and London: Harper and Brothers, 1945.

Paula Hooper Mayhew *was Director of the New Research on Women at Bryn Mawr College before becoming Associate Dean of the Hudson Valley Regional Center of Empire State College. She presently serves as Associate Director of the Middles States Association Commission on Higher Education.*

Lois G. Muzio *is a mentor at the Hudson Valley Regional Center of Empire State College. Her doctoral work at Teacher's College, Columbia, focused on reasoning strategies used by nursing students in making clinical decisions. Her own background is in nursing and nursing education. She is now studying relationships between teaching methods and thinking.*

Paula Mayhew
Lois Muzio

Women Learners in a Non-Traditional Learning Environment

If, as Claude Levi-Strauss has posited, a gendered society inevitably constructs itself on a male/female dualistic paradigm — men are the sun, women the moon — then all alternative institutions within such a society run the risk of being perceived as female. This stigma may be one reason why so many institutions defined as "other" yearn toward conventionality and tend to ameliorate their differences; the male status within the paradigm works an incredible seduction. But, if the sexist lure of male centrality is consciously avoided, feminist praxis suggests that "otherness" can work to the advantage of an institution as easily as to its disadvantage, and is as likely a source of energy as of entropy, especially for its female students.

In this article, we will describe the ways in which Empire State College (ESC), as an alternative institution, has both purposefully and unwittingly created a pedagogy that responds to the ways that adult women learn and know. It is not surprising that this alternate way of teaching has many characteristics of the kinds of changes in pedagogical assumptions and practice that are called for in the feminist critique of traditional education: among them, collaborative rather than competitive learning situations; non-hierarchical relations between teachers and students; and opportunities for female leadership. We will argue that a continued, more conscious, development of alternative pedagogies is both to the benefit of the College and of its non-traditional student body.

As groundwork for examining the ways in which ESC's non-traditional approach relates to the education of women, it is useful to review the main characteristics of traditional American education.

Traditional or masculinist university education in pre-industrial Europe was created to instruct young white men in the "elite" classes and did not address itself to the education of women. Later, in America, it became necessary to answer demands for the education of women in large numbers, due to the industrial revolution, the feminist movement, and the general democratization of education. Traditional institutions developed a set of curricular assumptions that recapitulated the sexist bias of the society: men are rational and are therefore likely to study mathematics and science; women are less rational and are therefore likely to study social sciences, home economics, teaching, and literature (Ford, 1985; Bledstein, 1978). In this model, learners of both sexes experienced little real choice in determining the futures for which their educations prepared them, and neither girls nor boys were encouraged to take an active part in defining, developing, and completing their learning. The chance to make choices was further restricted for people of color, especially women, who continued to represent the American group with the least educational opportunity (U.S. D.O.E., 1982, Table 108, pp. 385-386). It is, therefore, not surprising that in contemporary higher education, a system devised to suit the organizational imperatives of a sexist and racist society, positive outcomes are less likely for women than for men and for blacks than for whites.

Division by gender having been used from early childhood as the main indicator for future learnings, university students are then fit into prearranged strategies for the distribution of instructional resources. The most obvious of these ways of allocating people and funds is "the discipline," which is defined as a body of knowledge strictly separate from other bodies of knowledge, taught in social organizations called "departments," which are administered by colleagues in the same field. Disciplines divide into informal hierarchies, which perpetuate male dominance in the fields most valued by society: chemistry is superior to sociology, for example. Other strategies for the distribution of resources such as degree requirements, major programs, and classes are also developed instrumentally, by professors. American students have not, by and large, confronted these formal, budget-based assumptions about the ways education should be offered.

Sadly, John Stuart Mill's ideal principle for perfect equality between the sexes that would "admit no power or privilege on the one side, nor disability on the other," does not apply to traditional higher education. Traditional education has valorized masculine assumptions about the content and structure of knowledge, and the ways in which knowledge is obtained and transmitted. Historically, women have been neither the objects or subjects of these educational enterprises (Martin, 1982). The structures of modern universities, schools, disciplines, departments, courses, progressions of courses, etc., may be seen as externalizations of the mass of human knowledge and the methods by which it was obtained by successive communities of predominantly male scholars over time. As music is defined by, and reflects, the capabilities of the human ear, the scholarly enterprise reveals the form and substance of scholars' minds. The fact that these minds were for the most part masculine is of great significance.

For both men and women, thinking is an adaptive mechanism. It, and the mind in which it occurs, are shaped developmentally by interaction between endowed capabilities and environmental demands. For example, the tendency toward intellectual neutrality and disinterestedness, cultivated in most universities, is thought to be produced in upper class males by the form of language they use to encode thought (Kinney, 1980, p. 7). And similarly, a woman's preference to observe multiple and interacting factors rather than to control variables in thinking about causality may be rooted in women's psychologically structured inclination to think in terms of contexts and relationships. Since there has been no "university" constructed by the template of women's thoughts, knowledge, and ways of thinking and knowing, those structures based on male-generated thinking patterns stand as norms.

Women have other preferences based on adaptation for thinking and organizing knowledge. In contrast to "objective" approaches that seek singular, agreed-upon, scientifically derived "truth," women have evolved methods that emphasize comparison of multiple perspectives leading toward multi-faceted and evolving views of reality. The alternative approaches to learning and knowing, and the empirical knowledge and methods that will develop, may at some point in the future stand independently as external evidence that women approach the world differently, and the knowledge based on those differences will add a dimension to that which is already accepted. Such a conceptualization of knowledge is, by definition, altered by time, point of view and position in the social hierarchy (Keller, 1978).

Substantive research on the linkages between learner characteristics and learner outcomes is scant. However, it is well accepted that for adults in general, learning outcomes are centered around the needs and experiences of the learner. Knowles (1980) explains that the focus of and motivation for learning are related to the developmental transition from dependence to self-directedness; the growth of knowledge and experience that provides an ever-increasing base for new learning; the need to achieve developmental tasks that are related to assigned or desired social roles; and the change in interest from subject-oriented, immediately applicable knowledge to interdisciplinary, problem-oriented concerns.

In general, learning needs are derived from the individual's psychological and biological endowment and are shaped by social and environmental conditions. Consideration of the learning needs of women in particular is based on a presumption that women's needs vary from those of men and that these variations would be proportionate to the extent that women differ from men.

Although there is no evidence to support the notion that women's reasoning is intrinsically different or inferior to men's, there are differences in performance that cannot be extracted from individual preferences based on cultural, family, and school influences (Belenky, *et al.*, 1986). Women are more likely than men to relate the problems they encounter to their personal experiences and, as a corollary, to extend their personal quests, needs and motivations into their studies (Buerk, 1986). Women prefer to created contexts, to seek relationships, to look at the limitations of any solution and to examine the conflicts that remain (Buerk, 1986, p. 28). Women are more likely to resist controlling variables; they prefer to analyze the multiple and interacting effects of the variables. Women have an aptitude for diffuse awareness, while men are more inclined to focused consciousness (Gilligan, 1982, p. 10), tending to go directly to solutions in structured algorithmic ways, stripping away the very contexts that women prefer to include (Kaje, 1977). The problem-solving and decision-making approaches preferred by women have been devalued by scholars and scientists (Scheuneman, 1986, pp. 22-23). Certainly women need to strengthen their mathematical, reasoning, and decision-making skills, but doing so should not demand the negation of their own perfectly valid approaches.

The original critique of the education system as it emerged from the nineteenth century was John Dewey's; he argued that the experience of learning was a process in which the students must be active participants (Dewey, 1938).[1] In recent years, the familar hierarchical characteristics of

---

[1] For an unselfconscious grassroots account of one woman's attempt at educational reform, see Morgan, 1986.

American instruction have been scrutinized with concern primarily by feminist and Marxist critics. They have argued that the conventional lecture model for teaching and learning creates a passive, often amiable student for whom knowledge is packaged as a consumable "product," not the on-going process of dialectical interaction between people of mutual respect. This consumer-oriented way of learning does not socially empower disenfranchised groups such as women and people of color of both genders because it perpetuates an automatic and unequal power relation between all teachers and all students, a relation that only the privileged are likely to overturn after the experience. Feminists have been particularly negative about the competitive nature of the disputational or Socratic method of teaching, holding that competitive environments are not conducive to *women's* learning (they purposely limit their criticism to gender[1]) because such methods support individual rather than collaborative efforts and require aggressiveness instead of cooperation. Further, they note that in every academic discipline generalizations about "man" have obscured women's experiences. During the last decade and a half, the work of Paulo Freire and Adrienne Rich has given well-known and eloquent tongue to these concerns, but the movement toward change in educational goals has been taken up in many places where their books remain unread (Freire, 1970; Culley, 1985).

Empire State College, established consciously as an alternative to traditional education, with its one-to-one faculty/student relationships, independent study, and interdisciplinary faculty structure, has the opportunity to be responsive to women in a unique way. This special suitability is due primarily to the college's social milieu and flexibility it encourages in respect to topics of study and scholarly approaches.

The student/mentor relationship, which is the college's primary learning/teaching mode, has several characteristics that adapt positively to women's educational needs. For example, at Empire State the power relationship between student and faculty is altered, and that alteration has an impact on motivation and learning. A well-accepted value in education is that women should be prepared to assume leadership and responsibility. Many women, especially those who return to college later in life, have learned to take second place regardless of their knowledge and skill. Much has been written about women's fear of success (Horner, 1972), and their difficulties in assuming leadership even after a college education (Tidball, 1980). It may be that traditional hierarchies found in most colleges actually contribute to the continuation of deference and leadership-avoidance by women, even though they have been very successful in stimulating men toward responsibility and leadership. The role expectations of learners are powerful influences for both men and women and cannot be ignored. In situations that are hierarchically organized and that recapitulate traditional power relationships, learners are presented with role models of both leaders and followers; the powerful and the powerless. In contrast, students at Empire State are usually guided through their studies by mentors and tutors who confer with them about their learning process as well as measure their learning outcomes, and who serve more as scholarly role models and less as content experts. The experience of these students must be starkly different from their counterparts who sit before professors who lecture them, test them, and grade them. The more egalitarian approach of Empire State provides a far different environment for women to alter self-concepts and to shed roles of lesser power. One study, in a traditional setting, showed that one year of full-time college enrollment increased the confidence and motivation levels of men but diminished them in women. In fact, the only women who increased in confidence and motivation were those who were not well assimilated into the college environment (Stake, 1986).

---

[1] Critics whose main orientation is not feminist have also questioned the value of competitiveness in learning environments. See, for example, Chickering and Gamson, 1987.

The interpersonal characteristics of mentoring are also supportive to women's educational success. The female personality defines itself in relation to, and in connection with, other people. Due to their early relationships with their mothers, girls have a stronger base than men for experiencing the feelings of others on their own (Chodorow, 1974). The mentoring situation creates an opportunity for empathetic understanding, which may explain the attractiveness it holds for female faculty as well as for students. This mode of teaching and learning is satisfying to those who have needs for non-hierarchical and cooperative relationships. For both student and teacher it is conciliatory, affective and communicative; it draws upon characteristics for nurturing and helping. The learning environment created by this type of human relationship is especially important to female students because of the destabilizing nature of new learning. All students are disturbed by exposure to new ideas and perspectives; their values, attitudes, and ways of thinking and perceiving the world are shaken. For individuals with low self-esteem, this exposure can be particularly threatening. Mentor support and understanding can help a student to keep moving toward her educational goals when everything else seems to be distintegrating.

Study groups are extensions of the independent study approach used in the one-to-one setting, but expanded to include other students. For the learner, both are empowering experiences because the learning processes are active, cooperative, and demanding. Women are more comfortable in collaborative than in competitive situations (Hubbard, 1986). they often prefer group to individual achievement, and they avoid competition particularly when success would be at the expense of another (Gilligan, 1982, p. 10). Such preferences seem to be rooted deeply in women's traditional responsibilities as coordinators of family activity and function, but they have not served women well in male-designed organizations.

Student-centered independent study contracts and degree program planning allow women to structure substantive and rigorous study in topics that pertain to their unique domains, such as reproduction, child rearing, and community organiztaion in addition to engaging in traditional disciplinary study. The open-endedness of individualized degree program and contract planning makes it possible for women to define topics of study and to examine traditional content from a female perspective. To use a personal concern as the home base for an excursion into a scholarly pursuit, as is done in many contract studies, taps into an important motivational source for women. Empire State students do not have to wait until a sympathetic faculty member plans a course on their topics of interest.

Within individually planned contracts, mentors can help women to analyze their problem-solving tactics and can introduce them to theoretical models, such as ecological and systems theories; analytic tools, like multivariate statistical procedures; and naturalistic or non-intrusive for gathering data. These, and many other process-oriented multiple perspective approaches to learning, tend to affirm women's preferred modes of thinking.

In our estimation, Empire State College is unique among American colleges and universities in providing a field in which women's thinking can develop and organize itself into scholarly processes and academic structures. But as was suggested at the outset, the culture creates a gravitational movement toward centrist, male modes of convention. This centripetal effect seems inevitable, unless the non-traditional institution continues to exert a counterforce. Most institutions take well-meaning actions, but in alternative settings unless these actions are scrutinized in the light of the likelihood that they will tend toward the conventional, the institutions will succumb to the lure of conforming. This phenomenon applies not only to institutions, of course, but also to the individuals within them, and to the conflicts that are generated when the school has to connect with other agencies, institutions, and funding sources. While continuing to value change, we must steadfastly scrutinize what and how we decide to regularize, and in some collaborative way gauge the cost in terms of our special mission. If we do not, this social and educational experiment that so suits the needs of women and other disenfranchised groups may lose the very characteristics that make it of value.

References

Belenky, M.F., B.M. Clinchy, N.R. Goldberger, L.M. Tarule. *Women's Ways of Knowing.* New York: Basic Books, 1986.

Bledstein, Burton. *The Culture of Professionalism: The Middle Class and the Development of Higher Education in America.* New York: W.W. Norton, 1978.

Buerk, Dorothy. "Sharing Meanings in Mathematics: An Approach for Teachers." *Radical Teacher: Women in Science.* Boston: Boston Women's Teachers Group, January 1986: 26-29.

Chickering, Arthur W., and Zelda Gamson. "Seven Principles for Good Practice in Undergraduate Education." AAHE *Bulletin,* 39, 7 (March 1987): 4-7.

Chodorow, Nancy. "Family Structure and Feminine Personality." *Women, Culture and Society.* Eds. M.Z. Rosaldo and L. Lamphere. Stanford: Stanford University Press, 1974.

Culley, Margo, and Catherine Portuges. *Gendered Subjects: the Dynamics of Feminist Teaching.* London: Routledge and Kegan Paul, 1985.

Dewey, John. *Education and Experience.* 1938.

Ford, Carol. "Educating Girls for their Probable Destinies." *Golden Hill.* Women's Issue, 1985: 4 - 18.

Freire, Paulo. *Pedagogy of the Oppressed.* New York: Continuum, 1970.

Gilligan, Carol. *In a Different Voice: Psychological Theory and Women's Development.* Cambridge: Harvard University Press, 1982.

Horner, M.S. "Toward an Understanding of Achievement-Related Conflict in Women." *Journal of Social Issues* 28 (1972): 157-176.

Hubbard, Ruth. "Reflections of My Life as a Scientist." *Radical Teacher: Women in Science.* Boston: Boston Women's Teachers Group, January 1986: 3-7.

Kaje, Ritva. "Bringing the Feminine into Forecasting: Foreseeing and Learning." *Futures Research: New Directions.* Eds. H.A. Linstone and W.C. Simmons. Reading, MA: Addison-Wesley Publishing Company, 1977. 65-76.

Keller, Evelyn Fox. "Gender and Science." *Psychoanalysis and Contemporary Thought.* 1, 3 (1978): 409-433.

Kinney, James J. "Why Bother? The Importance of Critical Thinking." *New Directions for Teaching and Learning: Fostering Critical Thinking,* No. 3. San Francisco: Jossey-Bass, 1980.

Knowles, M.S. *The Modern Practice of Adult Education: From Pedagogy to Andragogy.* Chicago: Follet, 1980.

Martin, Jane Roland. "Excluding Women from the Educational Realm." *Harvard Educational Review* 52, 2 (May 1982): 134-148.

Morgan, Sylvia. "Intersection: Personal and Professional — A Women's Studies Administrator in a Rural Setting." *Women's International Forum* 9, 2 (1986): 163-170.

Scheuneman, Janice. "The Female Perspective on Methodology and Statistics." *Educational Researcher* 15, 6 (June/July 1986): 22-23.

Stake, Jane. "Education and Career Confidence and Motivation among Female and Male Undergraduates." *American Educational Research Journal* 21, 3 (Fall 1986): 565-578.

Tidball, M. Eliabeth. "Women's Colleges and Women Achievers Revisited." *Signs* 5 (1980): 504-517.

U.S. Department of Education. *Annual Review.* 1982.

Betty Hurley-Lawrence *has an Ed.D. in mathematics education from the University of Rochester and a B.A. in mathematics and mathematics-physics from Wells College. Before coming to Empire State College, she taught mathematics and physics to hearing-impaired students at the National Technical Institute for the Deaf and taught for two years in the mathematics department at Wells College. During her five years at Empire State College, she has worked extensively with adult learners in making mathematics more accessible.*

Louvan Wood *has been a mentor in Lockport, New York since 1979 and in Buffalo since 1976. His graduate education at the University of Maryland was in theoretical physics. He orginally became interested in mathematics as a basic skill in the 1970's when he taught in a program designed to prepare educationally and economically disadvantaged adults for college.*

Xenia Coulter, *originally from Michigan, has lived the last 14 years in New York State, where she worked first as a faculty member at SUNY Stony Brook and more recently as mentor/coordinator at Empire State College. With a B.A. in music from the University of Michigan, she earned a doctorate in experimental psychology at Princeton. Her research activities have ranged from testing naval pilots under threat of harm to the study of infantile amnesia in rats. The article in this issue represents her first excursion into the realm of mathematics.*

Xenia Coulter
Betty Hurley-Lawrence
Louvan Woods

Mathematics as a Basic Skill

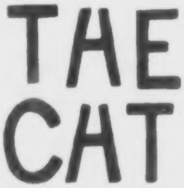
Today educators value the idea of "basic skills" much as ancient Romans, and even earlier the Greeks, valued the "liberal arts." Both basic skills and liberal arts are seen as abilities that need to be developed in any serious student as fundamental prerequisites for higher forms of knowledge. Problems arise, however, in trying to decide exactly what these prerequisite skills should be.

No one has serious difficulty in accepting as basic skills the necessity of being able to read, to write, and to think carefully (which for the Romans consisted of grammar, rhetoric, and logic, the "trivium" of the seven liberal arts). It is surely obvious that these skills are fundamental to any form of scholarship. And, although we do have courses in writing or in reading, many educators see that these skills can be taught within the context of almost any discipline (i.e., "across the curriculum").

Much lip service is given to the importance of mathematics as a "basic skill;" however, such skill is not universally viewed as a bedrock for academic work. Few people, for instance, regard mathematical ignorance as seriously as they would English illiteracy. Nor is it a part of our intellectual habit or heritage to regard skill in mathematics as a *prerequisite* for scholarship. Indeed, once grade school competency in arithmetic has been acquired, most people (including many mathematicians) regard additional mathematical skill as a high-level intellectual achievement rather than something that everyone can and should know. Finally, perhaps the most important problem in considering mathematics as a basic skill is that almost everyone assumes that mathematics must be acquired "down the hall" with the algebra teacher, in the remedial math lab, or with the resident mathematician. Rarely is it even considered that the teaching of mathematics could take place "across the curriculum."

Why are verbal and numerical basic skills regarded so differently? What would happen if we gave mathematics the same emphasis as we do verbal literacy? How far could the idea be developed that mathematics is a basic skill similar in range, applicability, and intellectual importance to verbal literacy? It is to these questions that this paper is addressed. It seems obvious to us that they *must* be addressed in any serious discussion of basic skills, and that they need to be discussed foremost by fellow educators and scholars. As long as we do not see mathematical skills in the same light as we do verbal skills, the importance of developing mathematical skills in our students cannot be easily justified. Unless we ourselves believe that a liberal education and serious scholarship is limited without a solid mathematical foundation, the inclusion of mathematics as a "basic skill" in our university curricula may be little more than a residual ritual requirement.

When we ask why the analogy between mathematics and verbal literacy is so weak, one obvious response is that our familiarity with numbers is enormously less than our familiarity with words. Our first "intellectual" endeavors begin with words, and much time well before the beginning of school is spent in learning to use one's native language. Similar emphasis upon the development of numerical or arithmetic skills is simply not a part of our culture.[1] As a result, commonalities between numerical and verbal skills are not even recognized, much less developed. For example, the way in which we typically read is referred to in information processing language as "top-down" processing. It means that because of much practice, a skilled reader recognizes whole words and is not forced to analyze each letter to determine what words she is reading. A commonly cited example is:

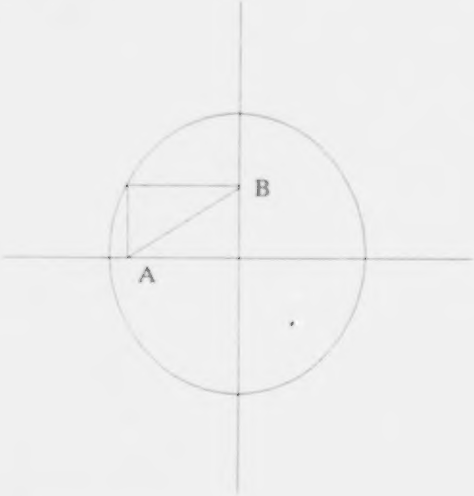


---

[1] One cannot help but wonder how the "computer age" might affect this situation (see, for example, Papert, 1982). If future children play with the computer and work with numbers as early and as often as they are now encouraged to talk, much of what we will try to argue here may become so embedded in the culture that it will eventually merit no discussion at all.

Although the middle letter of the two words is drawn exactly the same, an experienced reader knows without thinking that they are different.[1] Note that the situation is very different with a young child who still engages in what is called "bottom-up" processing and who would find the above example very difficult to read.

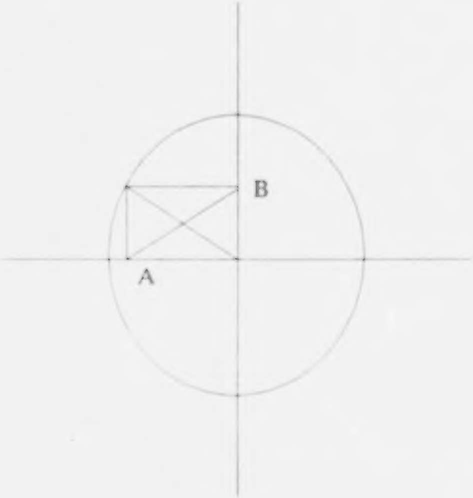
Davis (1984) has pointed out how both top-down and bottom-up processing also occur in mathematics, and that, as with English, the attainment of top-down processing cannot occur without considerable practice. Take, for example, the following geometry problem:



The problem is to determine the length of line AB assuming that one already knows the circle's diameter. Inexperience would lead one to attend to the details, namely, to the dimensions of the inscribed triangle, and the problem becomes extremely difficult. However, experience with circles or with geometric reasoning would lead one to see the problem in quite another way:

---

[1] The word is recognized first. What the letters must be is then determined by inference afterward — if such a determination is necessary.



And the problem becomes simple. AB is the same length as the circle's radius. Thus, the analogy between mathematics and verbal literacy exists, but it is difficult to recognize the similarities when our relative ability in the two spheres is so different.

It is in part because of this kind of general unfamiliarity with mathematical matters that we have experienced considerable uncertainty about what is meant by mathematics as a basic skill. For the Romans the mathematical components of the liberal arts, in other words, the fundamental mathematical prerequisites for knowledge, consisted of arithmetic and geometry. Today, with respect to the basic skills, such a simple definition does not exist. Ask any group of mathematicians, and they will have difficulty in agreeing whether minimal mathematical literacy should include competency in algebra or in calculus, or whether it should include knowledge of finite math or of statistics (although they would probably agree that neither arithmetic nor geometry would be their first choice). Indeed, many differing reports on critical skills have been issued by various professional organizations, such as the Conference Board of the Mathematical Sciences (1983), the National Science Board Commission on Precollege Education in Mathematics, Science, and Technology (1983), the National Advisory Commitee on Mathematical Education (1975), the Basic Skills Group of the National Institute of Education (1977), the National Council of Supervisors of Mathematics (1977). These reports have included thoughtful lists of important mathematical skills, but they have not provided the guidance, much less consensus, in showing how these skills are important in the general pursuit of knowledge.

Perhaps practicing mathematicians or scientists are the wrong people to ask in clarifying why mathematics should be considered a basic skill. They may be too involved in mathematics as a discipline in its own right to think of it as embedded in other fields as well. But then who should we ask? The "person-in-the street"? If we did, arithmetic might well be nominated as critically important, certainly for everyday survival. However, while the application of mathematics to the problems of living is important and the definition we are seeking might well include its practical uses, we believe that the meaning of basic skills must extend beyond the immediately useful to encompass relevant aspects of all kinds of knowledge (see, for example, Empire State College, "The Basic Skills Report" [1985][1]).

Given the insufficiency of definition that has come from the discipline of mathematics or that is likely to come from practical experience, we sought to approach the problem of defining mathematics as a basic skill by developing it from the point of view of scholars in other disciplines. We decided to take seriously the meaning of basic skills as a prerequisite to knowledge and to explore how such a definition could be applied to mathematics so that it was relevant across the curriculum. In what way, we asked, is our understanding of the world and of our disciplines truly dependent upon mathematical competence?

---

[1] From the report, we quote the College's definition of basic skills: "Basic skills are those which enable a person to interpet critically and communicate the information and experience s/he is likely to confront as a college student, workers, and citizen. With this definition, the [Basic Skills Committee] refers to the skills of apprehending, reading, reasoning, calculating, and communicating which should be common to all students. Such skills are present in and integrated with all disciplines of college level study, though subject to emphases and competency criteria determined by the educational purposes of each student."

As we explored this question, we began to see mathematical ideas in all sorts of unlikely places: music, art, philosophy, English, psychology, history. It is not that we discovered that all knowledge can be reduced (or elevated) to mathematical expression (as has been argued by the Logical Positivists), but rather we found that mathematics contributes as significantly to our ability to think and to extend our knowledge as to our ability to read and to write. Indeed, in considering mathematics from an interdisciplinary perspective we began to see that skill in doing mathematics, like writing, is actually one component of one's ability to describe, to illustrate, to illuminate, namely, to explain. Similarly, the value of being able to understand mathematical thinking seemed to resemble the value of being able to understand one's native language, that is, the ability to receive and understand ideas and thoughts that are not one's own. These considerations led us directly to the belief that a *fundamental* definition of mathematics as a basic skill must start with the assertion that mathematics is a form of communication.

Once we took communication as the basis for calling mathematics a "basic skill" (or a liberal art, for that matter), we then tried to discover its basic components. In other words, we tried to answer the question: in *how many different ways* does mathematics inform scholarly nonmathematical discourse? Initially, we were not certain as to whether we should focus upon enumerating particular skills (as with the liberal arts) or upon abstracting out certain common functions that might make up what we mean by communication. In the end, it appeared that the approach most compatible with an emphasis upon mathematics across the curriculum would be one that focuses upon the kinds of *uses* to which mathematics can be put; in other words, a functional analysis, rather than an analysis that emphasizes content.

In our discussions we settled upon three different functions or uses of mathematics that could be shown to exist in and illuminate all disciplines as forms of communication: numerical literacy, the expression of quantitative relations, and problem-solving abilities. A composite of all three competencies can be seen in mathematical modelling, which is one example of mathematics that can easily be found across the disciplines.

What follows then is a discussion of each of these various functions, in which we define them, exemplify them, and argue in each case their essential nature for the development of true scholarship.

Numerical Literacy

Numerical literacy, or the ability to interpret numbers in context, is a skill that most people would agree is essential for survival in our technological world. Examples abound that show where an understanding of numbers is a critical factor in being able to make reasonable judgements and intelligent decisions. For example, how many people out of ten thousand tested will be incorrectly diagnosed if a drug test is 98% accurate? If the stock market experiences its "largest drop in history," should we worry? If someone tries to sell us a 100,000 watt lightbulb, should we buy it or call the Better Business Bureau? And, if our calculator gives us an answer of 1.3572486, what judgments should we make about the precision of that answer?

Note how the numerical dimensions of these examples are already clearly stated. Such is not always the case, even though the success of science as a means of understanding the world argues strongly that evaluations of any sort require numerical restatement. How else can we interpret what is meant by the assertion that "too much alcohol is bad for you" if we are not prepared to determine precisely what "too much" means as well as to be able to quantify "bad for you"? "Hyperactive children should avoid processed food." How much activity distinguishes the hyperactive from the normally active? How much processing defines "processed" and how little eating constitutes "avoid"? The failure to quantify, that is, to convert vague ideas into concrete numbers, often (some say, always), leads to confusion, misunderstanding, and ignorance.

However, once we have the numbers, we still need to possess skills that permit us to easily and correctly interpret these numbers. In an age where a computer can provide us with more numbers within minutes than we can read in a lifetime, we need to know more than ever how to determine what is useful and important. And how do we do that? As a start, note how the ability to answer the questions posed by the above examples depended upon our ability to manipulate numbers, that is, to add, subtract, multiply, and divide. To evaluate the importance of the stock market drop, we had to be able to divide the current drop (say, 100 — such precision is sufficient for our purposes here) by the current level (say, 1800) and compare it (by subtraction) to some other amount of change (say, 80) at the level in force at that time (say, 1000). Thus, numerical literacy can be seen to depend at least in part upon a thorough mastery of arithmetic, even though the arithmetic processes may go on almost automatically.[1]

A cogent example of the kind of reasoning that we have been describing, namely, the ability to quantify and manipulate numbers, comes from the discipline of statistics. Recently, a case was presented to the Supreme Court where a convicted felon on death row argued that the death penalty should be declared unconstitutional because it was a form of discrimination. To defend his argument, he used data collected in Georgia that showed blacks had a significantly greater probability of receiving the death penalty than did whites. Thus, he converted a relatively vague term, "discrimination," into clearcut probability figures, and he used his knowledge of statistical calculation to make a very powerful case.

An interesting aspect of this case is that the court has not accepted these data as evidence. It has ruled that the felon must show that the different probabilities are "caused" by discrimination and that the State (or juries) "intend" to discriminate against Blacks. In rebuttal, some statisticians have pointed out that the statistics calculated take into account and thus rule out most other possible causes. Thus, if only by a process of elimination, the statistics originally presented are sufficient to argue for the only reasonable remaining explanation,that of racial discrimination.

To evaluate the soundness of these arguments, a person needs, first and most obviously, to be able to follow the details of quantitative calculation. In other words, some grasp of the "how to" part of statistics is needed. More importantly, a person needs to understand the assumptions underlying a statistical calculation, the conditions under which such calculations can be made, and the limits of their meaning. Generally, such understanding comes from working through actual problems in detail so that the assumptions, caveats, and limitations take on life as they inform the development of an argument or the establishment of a statistical conclusion.

---

[1] Note how numerical literacy becomes another example of top-down processing. Those skilled in arithmetic will see the percentage or relative meaning of the stock market example immediately. Inference about underlying arithmetic processes necessary to derive that percentage will come afterward — and only if called for.

The point we wish to make with our example is not necessarily that the statisticians are right and the court is wrong, but that public policy of the greatest importance is being argued here mathematically. An issue such as this one that needs to be understood and dealt with by every college-educated citizen, and certainly not just by those relatively few individuals who feel comfortable with numbers or who have a technical background. When an average person cannot follow an issue such as this one, it becomes as serious a problem of "illiteracy" as not being able to read, with the same kind of negative consequences for our society.

Quantitative Relationships

Even if we can quantify variables and know how to perform the basic numerical operations that allow us to make reasonable evaluations, we have barely tapped the surface of how mathematics serves as a means of communication. Let us take a common phenomenon — growth. How can it be described? How can we depict the relative change in the physical development of a child? What kinds of words can we use to talk about "increasing increases" in the loudness of, say, music? Although you might shy away from such terms as "exponential functions" or "logarithmic models," the fundamental conception of growth, and its limit, can be understood only in these mathematical terms. To demonstrate how the meaning of growth is communicated through the language of mathematics, let us describe the growth of a person's savings account as a simple example that almost everyone has studied at some time or another.

To begin, suppose we have $100 to invest and we want to know how much interest we will receive at the end of one year if we put the money in a savings account earning 7.5% annual interest. To answer this question, we multiply the rate expressed as a decimal (.075) by the principal ($100), and we add the result of our multiplication to our original principal ($100 times .075 plus $100). We can easily generalize this procedure as a *rule:* to calculate the amount of money in the account at the end of one year, multiply the amount in the account at the beginning of the year by the interest rate and add that result to the original amount. If, however, we are willing to use algebra, we can let r represent the amount of the interest rate, P the amount in the account at the beginning of the year, and A the amount in the account at the end of the year, and then write the "rule" as:

$$A = P + Pr$$

What have we gained by writing our "rule" in symbols? The most obvious gain is that the algebraic statement is about twenty times shorter and thus far easier to remember. But we think that there are three more substantive gains.

First, the statement $A = P + Pr$ is more than a *rule*; it is a *relation* between A, P, and r. It tells us more than simply how to solve for A. If, for example, we happen to know A and P, we can figure out, either by standard algebraic techniques or by trial and error, what r would have to be. With a relation, we can answer many more questions than if it were only a rule.

Second, we can easily recognize when two quantities are equivalent. For example, with a knowledge of the distributive property of numbers (the statement that $a(b + c) = ab + bc$ no matter what numbers a, b, and c represent — those of you unfamiliar with this relation can most easily convince yourself of its correctness by making up some values and testing it), we can see that $p + Pr$ means exactly the same thing as $P(1 + r)$. In nonmathemtactical terms, we can say that we get the same result by adding the interest rate (in decimal form) to 1 and then multiplying this result by the original amount as by multiplying the original amount by the interest rate and adding that result to the original amount. Again the algebraic statement is shorter. It also contains fewer referrals to antecedents ("multiplying this result by . . .") which tend, to us, to make prose difficult to read. And we defy anyone to recognize the equivalence of $p + Pr$ and $P(1 + r)$ from their English descriptions.

Third, algebraic language makes clear the *order* in which operations are to be performed. In the expression $P + Pr$, the symbols mean that we multiply P times r and then add the result to P. In $P(1 + r)$, the symbols mean first, add r to 1, then multiply the result by P. Unless the

English is both phrased and read very carefully, the order of operations can be confused. If, for example, the English reads: "The amount at the end of a year is the original amount plus the rate of interest times the original anount," how do we know whether to multiply then add, or add then multiply? (Note that adding and then multiplying gives quite a different result from multiplying and then adding.) Of course, if we remember the context of the problem, we know which operation to perform first, but such an English sentence puts a larger cognitive burden on us than the algebraic relation does. Commas could also be used to indicate order, but agreement on how they are to be interpreted is by no means universal. Thus, the conciseness of algebraic symbols coupled with the well-known and accepted conventions for order of operations leads to expressions which are more precisely stated in algebra than in English.

This small example illustrates three major reasons, besides brevity, for phrasing relations in algebraic language. First, English statements of principle tend to sound like rules, not relations, and thus often do not reflect the full content of the relation. Second, algebraic expressions frequently allow us to see equivalent ways of expressing an idea, and thus to make new connections; such equivalences can rarely be recognized when written in prose. And third, the conciseness and preciseness of algebraic symbols eliminate ambiguities which easily slip into English because of the length of sentences and the need to refer back to other numbers with words like "this" or "that."

Let us extend our example by asking how we might treat an investment that has a two-year, or five-year, or twenty-year maturity? In English, we say that we take the amount at the end of one year times the interest rate and add it to the amount we had at the end of one year to get the amount at the end of the second year. In algebraic symbols, this is $A + Ar$, or (by distribution) $A(1 + r)$. But we already know (see above) that $A = P + Pr$, or (by distribution) that $A = P(1 + r)$. So, if we can replace A by $P(1 + r)$, we can express $A(1 + r)$ as $P(1 + r)(1 + r)$, or more simply as $P(1 + r)2$. If we are concerned with a five-year term, we will find that all we need to do is to replace the exponent 2 with a 5. It then becomes clear that we can generalize to a term of any length simply by replacing the exponent with an arbitrary symbol, t, which stands for what ever number of years we want to consider. Thus we can write the amount A after t years as:

$$A = P(1 + r)t$$

117

If we had not been aware of the equivalence of P + Pr and P (1 + r), we would not have found the relatively simple relation between value at maturity and principal, rate, and term. Note that this equivalence has no meaning in English prose; it is comprehensible only in the language of mathematics. Also note that even after the relation among the four variables is developed, attempts to express it in English would have been subject to all kinds of ambiguities.

Let us now ask what might happen if we compounded more often than once a year. Our intuition suggests that more interest will be earned if it compounded, say, twice rather than once, because each successive amount will be calculated on a larger base even though the rate must be cut in half. Assuming our rate to be r, we can work out that since we are dividing our interst rate in half, the amount in the account after the first payment will be P(1 + r/2). After the second payment, since P now equals P(1 + r/2), the amount must be P(1 + r/2) times (1 + r/2) or P(1 + r/2)2. After t years, compounding twice a year, the amount in the account will be P(1 + r/2)2t. If the bank decides to compound daily, or 365 times a year rather than 2, the "2" in the previous relation will be replaced with 365, making it P(1 + r/365)365t. Thus, we can generalize the number of compounds per year to yet another arbitrary symbol, n, so that we can ultimately replace the "2" by n. After these deductions, we see that an amount compounded n times a year after t years becomes:

$$P(1 + r/n)nt$$

Why should we stop with daily compounding? Why not compound every hour or even every second? Will the amount of interest we receive continue to increase as it is compounded more frequently? Surely, there must be a limit to how large the balance of the account can get in one year. One way we can investigate this question is to choose arbitrary values for r, t, and p and to calculate values of A for larger and larger values of n. We can, up to the limits of the precision of our calculator, try values of 1,000, then 10,000, and then 100,000 for n and watch what happens to A, the balance in our account. If we make these calculations, we find, as our intuition would suggest, that once values of n get up into the tens of thousands, further increases make no practical difference in the account balance.

The next question, of course, is whether the practical limiting value of the account balance A can be found without going through the tedious process of repeatedly calculating A for larger and larger values of n? The answer is "yes," even though we need a good deal of the mathematical machinery that traditionally is part of a study of calculus. Thus, at this point we must, in effect, invoke a "higher authority." Nonetheless, we have found a way, if only by example, to express the growth of an account that increases less and less as it gets larger. For the record, we should point out that the result of letting n get larger and larger in the expression $(1 + r/n)n$ is by definition the exponential function, er, one of two extremely common growth functions.

The question of *how* we know that a limit is reached is one that interests the mathematician more than the average user of mathematics. A user wants to know whether a particular algorithm works in the case at hand and is satisfied with an empirical argument that the algorithm has worked in related instances. Rather than focussing on a search for the "right answer," mathematicians are interested in general definitions, in general axioms or principles that help them reach a result, and in the generality of the results they obtain.

We would argue that the study of mathematics as a "basic skill" falls somewhere in between these extremes, depending in part upon the needs of the student. Those who are involved in such fields as biology, business, economics, linguistics, and even music, may need for their work the theories of calculus (which deals with the ideas of limit and other concepts of quantification). What is "basic" for them may differ from what might be "basic" for a philosopher or a student of French. Of course, we can also argue that the theoretical study of mathematics is intrinsically interesting, and worthwhile too, just as are other such culturally enriching studies as art, history, or literature. But in this paper we are trying to illustrate how mathematics is "basic" and relevant to all disciplines; thus, we have focused on showing how to comprehend and to communicate, without emphasizing those aspects of mathematics that are important to the field itself.

In sum, we have shown, largely by example, the importance of facility with algebraic expression. The conciseness, clarity, and completeness of algebraic notation allowed us to develop a relation, not just a rule, among five quantities and then to consider the consequences of allowing one quantity to increase to arbitrarily large values. In developing our relation, we saw how only through the use of mathematical symbols could we come to a clear description and understanding of the idea of growth. Certain questions, such as what happens when interest is compounded continuously, would not even have been considered had it not been for purely mathematical developments. Certainly it is possible, and even common, for a person to take a mathematical argument as given. But a complete understanding of what has been argued cannot be claimed unless that person is willing and able to follow the mathematical ideas. English prose by itself is simply insufficient to develop quantitative relationships regardless of what disciplines these relations may inform.

Problem Solving

Problem solving consists of reassembling old ideas or creating new actions and ideas to achieve ever-changing goals. It is an essential skill for dealing with situations for which we have not been programmed, and it is a skill that depends upon prior knowledge. Mayer (1983) has argued that in order to solve mathematical problems, at least three kinds of competencies are necessary:

1) Translation skills, which demand linguistic, semantic, and schematic capabilities;

2) Solution skills, which require the kind of knowledge we have already described in this paper, namely, the abiity to do arithmetic and to use algebraic algorithms; and finally,

3) Control, or the ability to determine how and when to use the above skills in addressing a particular problem, which he has called "strategic knowledge" (p. 373).

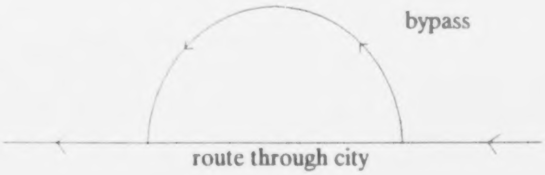
Much research has been done in the area of problem solving, but we are far from understanding the complex processes involved. Polya's book, *How to Solve It,* written years ago (1945), is still considered a standard in the area, at least in terms of practical advice. He is best known for his four-step approach to solving a problem: understand it; devise a plan; carry it out; and reflect back on the process. He encouraged the potential problem solver to be creative and flexible in approaching a problem, recommending such actions as searching for related problems and "playing" with the given information to stimulate the discovery process. He also was largely responsible for focussing attention upon the critical role of heuristic reasoning, which he defined as "reasoning not regarded as final and strict but as provisional and plausible only. . ." (Polya, 1945, p. 113).

Current research in the area of information processing and artificial intelligence has followed up on some of Polya's ideas about provisional reasoning and has begun to clarify some of our understanding of the processes involved in problem solving. Evidence suggests that problem solving can be learned, that problem solving consists of using a "meta-language," and that this language of process develops from experience and the practice of making connections (Davis, 1984). In essence, the problem solver comes upon his solutions by being able to call upon a collection of useful procedures, a process that is quite similar to what Polya defined as heuristic reasoning and that Mayer calls strategic knowledge.

The perception of problem solving as a form of language in and of itself suggests that we learn to solve problems the way we learn a language. Interestingly, a recent theory about first language acquisition regards it as a form of problem solving (e.g., Smith in Atkinson, Atkinson, & Hilgard, 1983). In both instances, we must first acquire a knowledge base, namely, vocabulary and procedures, and we must take an active role in assimilating this knowledge (Piaget 1970). That there are commonalities between language learning and problem solving strikingly reinforces our belief that verbal and mathematical skills have much in common. The focus upon language also reminds us that, as we have argued mathematics as a basic skill is a form of communication, communication is the essence of verbal literacy as well.

To illustrate how language and skill with that language are crucial to problem solving, we present an example taken from Kennedy (1985). While several authors (e.g., Kennedy, 1985; Schoenfeld, 1983) have argued that problems need to be drawn from the "real world," and while we would agree that is desirable to do so as far as practical, many "applied problems" have an unavoidably artificial feel to them. We say unavoidable because real problems tend to be too complex for anyone but experts in both mathematics and the field in question to attack effectively and because our various cultural backgrounds and interests preclude any one problem from being interesting and "realistic" to everyone. (Indeed, the three authors here, presumably because of our differing disciplines, tended to find quite different problems "interesting" or "realistic" as we looked for examples for this paper.) Anyone trying to develop skill with mathematics must work through some contrived exercises, as we did earlier with our interest example and as a student of English composition must sometimes work through contrived writing exercises. The following example, then, was chosen because we hope it will seem realistic and because it does not require knowledge beyond what is usually taught in high school.

Many of us have been faced with the situation where we are encouraged by imposing road signs to take a circular bypass rather than drive through the city. In such a case, we have occasional wondered whether driving through the city might not actually be faster? This situation could be diagrammed as follows:



One way to choose between two routes is to find the distance for each. Given that the road through the city lies along the diameter, we know that the distance along the semicircle is half the circumference of a circle, or (from geometry) π d divided by 2 (where π is the symbolic representation of a very special number, which is approximately 3.14). For example, if the distance through the city is 5 miles, then the distance all the way around the city is approximately 16 miles (3.14 x 5) and the distance half way around must then be approximately 8 miles (or 16/2). The exact figure for those of you with calculators is 7.85 miles.

Going back to the original problem (that is, which road should you take), you would then need to compare how long it takes to travel each of these distances at different speeds. Say, if you can travel at 55 miles per hour going around the city and at 30 miles per hour going through it, then it would take 8/55 of an hour to go around and 5/30 of an hour to go through. In order to compare the two fractions, we need to determine a common denominator and recalculate the fractions (which in this case means we need first to find 330 and then compare 48/330 to 55/330). However, note that these calculations need to be performed several times over so that we can evaluate a variety of speed combinations. By the time we have worked out the proper fractions and a reasonable set of possibilities, we will surely be on our way to the next city! Thus, a simple approach to the problem allowed us to solve it, but only in a rather tedious and inelegant way.

Let us look at the problem again. Is there some way to consider it so that we can find one simple solution that is not based upon the need for multiple arithmetic operations? If we stop long enough to reflect upon this question, something in our prior experience (e.g., from driving, reading maps, doing geometry problems) may help elicit the insight, namely, that the actual size of the city shold not matter to our solution. This insight can be substantiated from formal knowledge of geometry or an intuitive grasp of the fact that the circumference of a circle and its diameter have a fixed relationship (see above). Thus, we can deduce or simply "see" that the relationship between *any* bypass (or half the circumference) and the alternative route through the city (the diameter) must always be the same, regardless of whether the city is Peoria or Indianapolis. Given that the distance of the bypass equals $\pi d/2$ or $d(\pi/2)$ and that the distance through the city is simply d, the relationship can be expressed algebraically by the following ratio:

$$\frac{\text{distance around city}}{\text{distance through city}} = \frac{d(\pi/2)}{d} = \frac{\pi}{2}$$

Note that the basic relationship can be stated without any reference to distance at all. Thus our re-examination of the problem led us to see that determinations of distance (which was our first impulse) may not be needed in solving our problem.

So what *do* we need to calculate? Is it possible to eliminate the need for making a variety of time comparisons? Could we eliminate time completely? How? Upon reflection (possibly drawing upon prior experience with distance and rate problems), a solution comes to mind: Time can be effectively eliminated if it is not allowed to change, in other words, if we can assume that the two routes take the same amount of time to drive. With that assumption all we need to do is to determine how fast each route needs to be driven in order to achieve that time, thus reducing the problem to a question of which speed can be the most reasonably achieved.

With this restatement of the problem, how far can we go? Our starting position is:

Time around city = Time through city

And, since we know that distance is equal to rate x time ($d = rt$) and that therefore time = distance/rate, we can, by substituting in the above expression, come up with the following ratio:

$$\frac{\text{Distance around city}}{\text{Rate around city}} = \frac{\text{Distance through city}}{\text{Rate through city}}$$

Because we know that the actual distances to not matter, it may be useful to put them in the same term by rewriting the ratios, as:

$$\frac{\text{Distance around city}}{\text{Distance through city}} = \frac{\text{Rate around city}}{\text{Rate through city}}$$

Now we can draw upon our knowledge of the *relationship* between the two distances, which we calculated above to be $\pi/2$. This figure can be substituted directly for the distance ratios in the above equation, as follows:

$$\frac{\pi}{2} = \frac{\text{Rate around city}}{\text{Rate through city}}$$

Look at what has emerged: a fixed number ($\pi/2$ or approximately 1.6) and a formula that is based upon rate (which is under our control) rather than distance (which is not). By playing around, we came up with a solution to our original problem, that the rate around a city is always equal to $\pi/2$ or 1.6 times the rate through the city, which is applicable to all bypass problems. In concrete terms, it means that if we can go through the city at an average speed of, say, 45 miles per hour, we need to average going around the city $\pi/2 \times 45$ (or about 71 mph) to match that time. The choice of route, of course, once the solution is in hand, depends upon environmental or social or even personal considerations (as we check the road, look for police, or think about safety).

The reasoning process we have just described is a difficult one to summarize, although we believe that it does exemplify well the heuristic reasoning process. Certainly, we needed to have reasonable facility with algebra and geometry, the solution skills described by Mayer (1983). We also probably needed some experience with similar or relevant problems, Mayer's "strategic knowledge." And, as Polya (1945) has suggested, we needed to be willing to play with the problem and to be able to recognize important provisional ideas. The first key to the final solution was in thinking of *relating* the two distances, rather than calculating them. And the other key to the solution was in thinking of *equating* (holding constant) time, so that all we needed to calculate was speed. Most of us have the requisite *knowledge* of these processes to follow how the solution was derived, but significantly fewer of us have the necessary practiced *skills*.

It is not necessary to argue the generality of problem solving. It is part of all our intellectual skills (e.g., writing, debating, thinking, etc.); and it is the essence of what we do in our various disciplines. What is interesting is that the definition of the meta-language of problem solving, the generation of strategies and heuristics, of which we have only rudimentary knowledge, and our observations of the process, have been developed largely from the discipline of mathematics. Although you might wish to argue that mathematics has been used as the basis for understanding problem solving simply because of tradition, the reason is probably much more fundamental to the discipline. What we do to solve a math problem is much more easily seen with the sparse and uncompromising language of mathematics than with ordinary English prose. More importantly, what we do not understand about the process is more clearly seen using mathematical symbols than in a language system that allows (and some say, even encourages) colorful albeit imprecise expressions, discursive development where a thread of thought can be easily lost, clever turns of phrases which are admired for their own sake. These characteristics are not faults, indeed they enrich our experience, but they are not the kinds of attributes that lend themselves well to effective problem solving.

Modelling

A mathematical model is a set of mathematical expressions and equations. It is developed not to solve a specific problem or to derive particular solutions, but to characterize and illuminate relationships among variables. Since it uses arithmetic terminology and symbols, numerical literacy is deeply involved in grasping the meaning of the model. Since it is an expression of relationships, all the benefits of algebraic expression, discussed above, obtain as well. Clearly, it serves as an attempt to translate reality into mathematical language, and in trying to establish the rules for making that translation, a mathematical modeller engages in all aspects of problem solving.

Psychology is an interesting discipline from which to illustrate how the three communicative aspects of mathematics inform the development and use of a mathematical model. As a whole the discipline seeks to understand human nature by discovering all the variables that contribute to human behavior and determining how they work together to control what a person might do (or think). The ultimate goal for psychology is to determine the cause of behavior such that it can be perfectly predicted if all the casuative factors are known. Some psychologists believe that a true understanding of human behavior can be claimed only if it can be described by mathematical expression. Needless to say, much of human behavior has eluded the quantification necessary to permit such a description in mathematical terms. Indeed, the assumption that motivates the search for mathematic expression has often been attacked. Nonetheless, the search goes on — in part because the process itself is extremely useful. Simply looking for a model introduces new perspectives that can lead to new ideas, theories, and even new knowledge. And once the model has been established, it allows all those who can understand it to consider certain issues about human behavior that would not be obvious if not expressed in mathematical terms.

Before we examine a concrete example of a mathematical model developed early in the history of psychology, we need to review certain concepts of mathematical expression. Note that this review relates to the issue of numerical and symbolic literacy. Certain arithmetic operations as well as the use of symbols are as essential in using a mathematical model as are notions of spelling and puncutation in the reading of, say, English prose. For example, in order to understand the following expression:

$$A = B + K$$

we need to appreciate (from familiarity with algebra) the implication that if B gets bigger, so too does A, and that if B gets smaller, so too does A, whereas in the following case:

$$A = K - B$$

A and B are inversely related, which simply means that the bigger B gets, the smaller A gets, and vice versa. The same kind of conclusions can be drawn in the following cases:

$$A = B \times K$$

and

$$A = K / B$$

That is, in the first case, as B gets bigger, so too does A, whereas in the second case, as B get bigger, A becomes smaller.

When we consider human behavior, we must start with some experientially derived observations just as we would in solving any kind of problem. For example, the kinds of behaviors that intrigued the mathematically inclined psychologists of the 1930's were learned habits or skills. In a very general sense, it seemed to them that the performance of any habit, and it could be something simple like throwing darts or complicated like solving mathematical problems, must depend upon (a) the level of skill that the person has and (b) how motivated the person is to do the task. It is hardly a long step away to then raise questions about the nature of the relationship between these two factors. Are skills and motives directly related (does performance improve with more skill and more motivation) or are they inversely related?

Certainly, on the face of it, it would seem that the relationship ought to be a direct one, and that fairly obvious position is the one that the early psychologists took. But that still left another question. Should this direct relationship be expressed as:

$$\text{Perf} = \text{Skill} + \text{Motive}$$

or as:

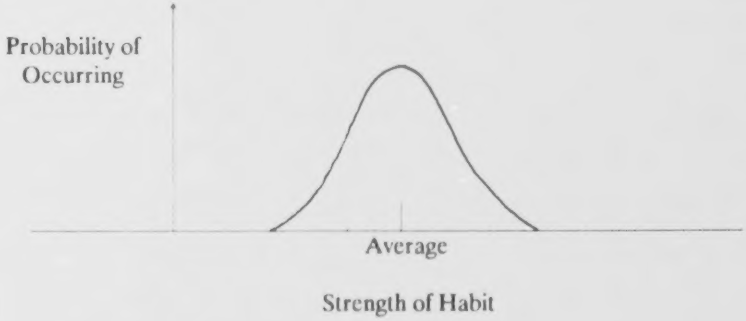
$$\text{Perf} = \text{Skill} \times \text{Motive}$$

Again, the psychologists made their decision on the basis of experience, common sense, and reasoning. The first equation means that if someone is motivated enough, even though s/he has no skill at all, s/he can manage to perform. This meaning is derived from the fact that although one term might equal zero, the other term can still contribute its effect (which is the meaning of additive). And as far as the psychological theorists were concerned, that situation was clearly impossible: If you don't know how, no matter how badly you might want to perform, you still cannot play the piano, ski, or write dissertations. However, a multiplicative function, where if one term equals zero then the entire expression equals zero, expresses the reality quite well. Thus, the formula for performance was deduced to be the second one.

With the components of a basic equation now in hand, theorists saw immediately what followed obviously *from the formula itself.* Not only does performance require some degree of skill, but it also requires motivation. In effect, if the formula is correct, then no matter how hightly skilled, a person will not perform without some level of motivation. Since this conclusion was deduced in theory, it still remained for psychologists to validate the implication empirically.

Such validation proved impossible to obtain. The reason was that the original formula was intended to describe *learning* rather than performance, and while people could agree that *performance* might well be a multiplicative function of skill and motivation, they bitterly disagreed as to whether learning also depended critically upon motivation. Studies proliferated purportedly demonstrating that learning can take place latently or incidentally, only to be subject to a motivationally based reanalysis. Largely because of these disagreements the formula was eventually modified to its present form as an expression of performance. Thus, it was in part the result of an attempt to develop a mathematical model that the now obvious distinction was drawn between learning and performance, an attempt that also resulted in a clearer articulation of the issues to be considered in working out the relationship among contributing factors.

It soon became clear that many of the critical parameters had to be extended in order to apply the equation to more complex settings, for example, to predict the relative likelihood of observing two competing skills which differ in strength (defined usually by amount of practice) or in motivation. The theorists soon realized that valid predictions were impossible unless it was assumed that the strength of each different skill fluctuates around its average level, an assumption that was depicted graphically as follows:[1]



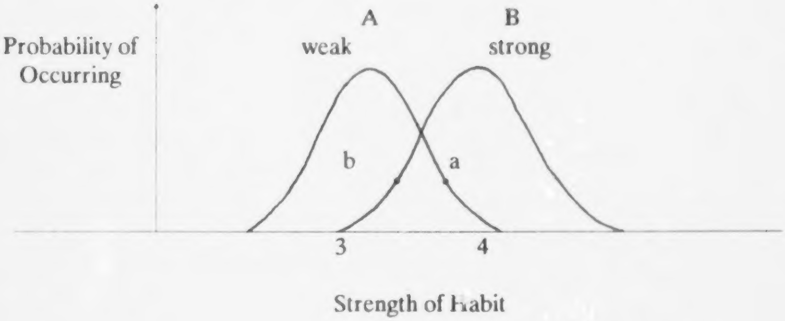
This figures shows for any given habit or skill, first, the *range* of its strength and secondly, how *likely* it is for the habit to be at each strength level. Thus, a habit is always most likely to occur around its average level of strength, because the function is at its highest peak at that value; however, it will also (although less often) occur when it is significantly weaker (or stronger).

Armed with the fluctuation assumption, psychologists were now able to consider the more complicated situation of multiple skills. To exemplify, let us consider what happens when we try to correct a bad habit, that is, learn a new way of doing something. In the beginning the old habit is always strongest because it has been practiced the most. Note that without the fluctuation assumption the strong habit is the only behavior that one could ever observe.

However, once it is assumed that the two habits can vary in strength, the relative possibilities of their occurrence are greatly extended, as can be seen in the following figure:

---

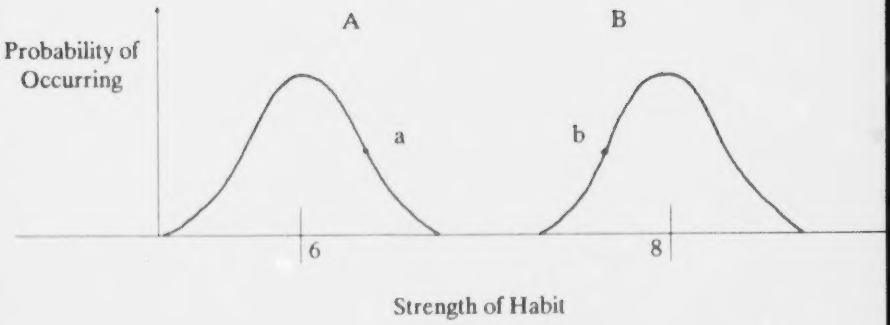
[1] If you are familiar with statistics, you will recognize the following graphs as normal probability functions.



As the figure shows, as long as there is overlap between the varying strengths of the two habits, the weaker habit can be at a higher level of strength than the stronger habit (as for example when it is at point "a" and the stronger one is at point "b"). When it is stronger, the weaker habit is the one that will be performed. How often it will occur, of course, depends upon the degree of overlap.

Let us develop this example somewhat further. Suppose you are trying to improve your serve in tennis. Your old serve has proven relatively ineffective, and you want to change various components of your technique. After some weeks of practice, the old and new ways of serving now overlap in strength, but the older habit is still stronger, say on average 4 units strong with the newer habit at an average strength of 3. Thus the average difference between them is about 1 (arbitrary) unit.

Now imagine what would happen if your ***motivation*** were significantly increased — if, for example, you find yourself playing for high stakes or serving in a tournament rather than playing for fun or serving on a practice court. Common sense suggests that the high stakes should encourage you to be extremely alert and careful and to so energize you that you can use your new habit to great advantage. But what does the formula suggest? Because performance is a function of both skill level (habit strength) ***and*** motivation, the strength of your performance will certainly increase (e.g., you will hit the ball faster and harder). However, because it is a ***multiplicative*** function, your performance level will increase ***more*** for the ***stronger*** (old) habit than for the weaker (new) one, as follows:



Note that with the increase in motivation the distance between the two habits is now greater than it was when motivation was less. If we assume motivation to be a factor of 2, the difference, instead of 1 is now 2 (2 x 4 for the stronger habit minus 2 x 3 for the weaker one). The difference, at least in this example, is now so great that the overlap is eliminated so that the weaker habit will now never occur. Thus, the model predicts in general that if one skill is weaker than another, the more strongly motivated you are, the less likely you will be able to perform that skill. So, as regards your tennis serve, in contrast to common sense, the model suggests that when the stakes are high and even though it matters more, you will serve more poorly than if you were practicing in private.

Comparable predictions can be made with respect to the effects of strong motivation upon the performance of easy and difficult tasks. Given that the difference between an easy and difficult task is in habit strength, the model suggests that a level of motivation that might enhance the performance of an easy task could easily impair the performance of a difficult task.

All of these predictions have been validated in laboratory experiments as well as in the field. Indeed, upon reflection it may not seem so surprising, common sense notwithstanding, that under stress (i.e., high motivation) a borderline skill will "fall apart." However, the prediction has also been show to apply in situations that are far less obvious and for a wide variety of different skills and during a number of different motivational states.

Thus, it can be seen that a mathematical model, as in this fairly simple example, can and does help psychologists to think clearly about the kinds of factors that might contribute to behavior of interest, to develop new ideas through mathematical considerations, and to predict events that are not necessarily obvious. Phenomena that one might take for granted take on a "new look," and analyses with the help of mathematics can become easier to accomplish. A mathematical model will also usually provoke questions and issues that might otherwise not be considered. In sum, the use of even simply mathematical functions can stimulate genuinely new intellectual insights. Surely such possibilities should motivate us to acquire the quantitative skills we need so that such advantages are available to us all and not just the mathematically adept.

Conclusions

In this paper we have tried to pursue the idea that mathematics is a basic skill in the same way that verbal skills are so regarded. As we examined the implications of that idea we argued that to the extent that mathematics pervades all the disciplines it can be regarded as a form of communication. We then divided the communicative aspects of mathematics into certain subcategories of use in order to illustrate its pervasive nature. In this way we have tried to persuade the reader of the import of mathematics as a basic skill and its significance to general scholarship.

If mathematics is considered to be a basic skill in the all-inclusive way that we have argued, it follows that not only does it inform all the disciplines, but it can be taught "across the curriculum" in the same way that educators now believe that writing and reading skills can and should be developed. For many of our readers it might appear to be asking too much of them to pursue this idea. With relatively weak (and sometimes non-existent) skills in mathematics, how can a teacher of literature or a language or philosophy or anthropology recognize within their discipline, much less discuss or teach, the kinds of mathematical ideas that we have presented here?

Such a reaction is understandable — especially within an intellectual tradition where practice and formal training in numeracy and verbal literacy are so unbalanced. However, if the argument is sound that mathematical thinking helps illuminate the substance and process of knowing, we have to start somewhere addressing and correcting this imbalance. In some ways, pressure is already being exerted by society's increasing dependence on technology. The frequent call for more "math and science" simply reflects that pressure. But what is needed is not just more math and science teachers, but an explicit recognition by non-mathematicians of the degree to which their own profession is permeated by mathematical concepts, ideas, and approaches, and an ability to articulate its pervasiveness.

We believe that the first step lies in the re-education of our teachers and college faculty. We need workshops, books, lectures, exercises, all written for professionals to help them develop an awareness of mathematics in their own areas of expertise and to elevate their numerical skills. Obviously, we also need to learn how to teach mathematics "across the curriculum." Although mathematicians may be willing to help us learn about mathematics as an absolute discipline, they are not very likely to be able to show us how it relates to our various disciplines, much less how to incorporate that knowledge within our teaching. They simply do not know these areas well enough. Thus, the task of developing methods for helping our students discover the pervasiveness of mathematics within our own areas of knowledge must ultimately be accomplished by those of us who are not mathematicians. No doubt it will take a long time, but the end result cannot help but be worth the effort.

REFERENCES

Atkinson, R., H. Atkinson, and E. Hilgard. *Introduction to Psychology.* New York: Harcourt, Brace, Jovanovich, 1983.

Basic Skills Group of the National Institute of Education. *Conference on Basic Mathematical Skills and Learning,* Vol. 1 and 2. Washington, D. C.: National Institute of Education, 1977.

Conference Board of the Mathematical Sciences. *New Goals for Mathematical Sciences Education.* Washington, D.C.: Conference Board of the Mathematical Sciences, 1983.

Empire State College. *Basic Skills Report.* Saratoga Springs, New York: Empire State College, 1985.

Davis, Robert B. *Learning Mathematics: The Cognitive Science Approach to Mathematics Education.* Norwood, New York: Ablex Publishing Corporation, 1984.

Kennedy, Dan. "Mathematics in the Real World, Really." *Mathematics Teacher,* January 1985: 18-22.

Mayer, R.E. *Thinking, Problem Solving, Cognition.* New York: W.H. Freeman & Co., 1983.

National Advisory Committee on Mathematics Education. *Overview and Analysis of School Mathematics — Grades K-12.* Washington, D.C.: Conference Board on the Mathematical Sciences, 1975.

National Council of Supervisors of Mathematics. "Position Paper on Basic Skills." *The Arithmetic Teacher,* October, 1977: 19-22.

National Science Board Commission on Precollege Education in Mathematics, Science, and Technology. *Educating Americans for the 21st Century.* Washington, D.C.: The National Science Board, 1983.

Papert, Seymour. *Mindstorms: Children, Computers, and Powerful Ideas.* New York: Basic Press, 1982.

Piaget, Jean. *Science of Education and the Psychology of the Child.* New York: Oene Press, 1970.

Polya, G. *How to Solve It.* Princeton, N.J.: Princeton University Press, 1945.

Schoenfeld, Alan H. *Problem Solving in the Mathematics Curriculum.* Mathematical Notes, 1983.

***Alan Mandell** has been a mentor at Empire State College for over twelve years and currently serves as the Associate Dean at the Hudson Valley Regional Center. He has recently completed another essay on contemporary education with Frank Fischer of Rutgers University, to appear in the Spring issue of* Telos. *Mandell also edits a journal of social and cultural criticism,* Kairos.

Alan Mandell

To Search for Our Ground(s): Technocracy, Contemporary Thinking and the Computer[1]

What are you doing
up there
said the ground
that disastrous to seers
and saints
is always around
evening scores, calling down

A. R. Ammons

I. A "Crisis" in Education?

Over the last four years, a plethora of reports about the status and quality of education in contemporary America have been published. Some have even made front-page news. *A Nation at Risk* claims that in our school policies, "we have, in effect, been committing an act of unthinking, unilateral educational disarmament." *Action for Excellence* concludes that "our national defense, our social stability and well-being and our national prosperity will depend on our ability to improve education and training." More recent analyses see our schools producing "closed minds" and "cultural illiterates." The rhetoric of alarm that characterizes these texts on education is surely informed by various tacit understandings of contemporary economics, politics, and "high" technology, as well as by particular presuppositions about the exigencies of American foreign policy. So, too, most are significantly motivated by an assumption that America must replace an omnipresent and damaging "mediocrity" with a social and economically necessary "excellence." And thus, along with its particular articulation of the "crisis," each report (whether the product of a commission of professional educators or scientists or business people or of an individual academic) also includes its own set of remedies, of guidelines, curricula, or competencies that prescribe models for "improving educational performance."[1]

---

[1] Special thanks to good colleagues and friends for their careful reading (and re-reading) of this manuscript: Chet Bowers, Deborah Britzman, Michael Gruber, Richard Hendrix, Lee Herman, Wendy R. Kohli, David Porter, Amy Rose, Victoria Shick; and especially to Frank Fischer. A version of this paper was presented at the American Educational Studies Association in November 1987.

But as one attempts to study seriously the details of these writings — to find the logical gaps, the assumptions behind the "imperatives," to unravel the visions of schooling and society that lie beneath these varied calls for "reform" — to offer the basis of a critique, one also begins to take notice of a broader confluence of ideas and shared terms of thought that inform them. By setting out to compare and contrast particular reports and to analyze the strengths and weaknesses of specific recommendations, one can become trapped within the bounds of a basic world-view that is rarely directly addressed. How easy it is to pass over more telling sources and grounding metaphors and to miss the social-cultural assumptions of the discourse itself.

The details (if not the spirit) of these current reports will no doubt be forgotten, just as those that announced other "crises" of education surely have been. But contemporary attention to the world of education — even if one acknowledges the hyperbolic and ideological nature of much of this reporting — points to something important about the nature and the limits of how we think, and the grounds we take for granted. What this essay represents is an initial effort to find a way into the often hidden meanings and presuppositions of our language, the quality of our thinking. It seeks to see in this current version of "the crisis" an occasion to acknowledge a set of problems about the world of modernity: both its contemporary technocratic form and the central role of the computer to that world.

---

[1] For useful summaries and critical interpretations of the many reports of 1983-1984, see Altbach, Kelly and Weis (1985).

This essay attempts to provide an approach to help us understand the connections between the structures, values, and normative foundations of present-day societies and the forms and functions of language, thought and knowledge that we take for granted. In this sense, the following reflections are not about schools, but about the powerful and tacit assumptions that inform the very questions that we ask and the ideals that we hold about learning and society itself.[1]

II. Society as Discourse and Language-World

If we think of education as that particular training and socializing process which allows us to enter a specific world of conversation, then our way of thinking about society itself must change. Various philosophers and, in fact, the entire tradition of what is called the Sociology of Knowledge have taught that society might properly be conceived as a storehouse of complex communicative practices. Language and world are so deeply interwoven that it is almost impossible to separate them at all. Heidegger, for example, sees language "everywhere":

> . . . language belongs to the closest neighborhood of man's being. We encounter language everywhere. Hence it cannot surprise us that as soon as man looks thoughtfully about himself at what is, he quickly hits upon language too, so as to define it by a standard reference to its overt aspects (Heidegger, 1971, p. 189).

It is the "linguisticality" of our experiences — the very notion of societies as language worlds — that perhaps expresses our humanity most vividly. As Gadamer describes:

> Our own language world, this world in which we live, is not a tight enclosure that hinders the knowing of things as they are: rather, it encompasses basically everything which our insight is able to broaden and lift up. Certainly

---

[1] Shor (1986) offers a significant critique of the ideological foundations of this crisis-thinking. See also Spanos (1982).

> one tradition sees the world differently from another. Historical worlds in the course of history have differed from each other and from today. At the same time, however, the world is always a human, and this means a linguistically created, world which is presented in whatever heritage it may be (1975, p. 423).[1]

From this point of view, we might see ourselves as participants in an ongoing conversation that is bounded by the grammars, styles, and punctuations of specific institutions and historical epistemes. Our everyday activities become "moves" encased within vocabularies of meaningful action that we learn to take for granted and specific definitions of knowledge that we are taught to accept as true. To be any "member" and especially an "educated member" is to internalize the sacredness of a specific terrain of discourse that provides access to the objects and people around us and to ourselves.[2]

This insistence on the primacy of language (Albrecht Wellmer described it as the "linguistic turn" [1976]) has informed much contemporary analysis — from Wittgenstein and the ordinary language theorists, to Schutz and the phenomenological tradition, to the philosophical and literary explorations of Derrida, Kristeva, and Said, to Foucault's histories of punishment and sexuality, to Lacan and Irigary's reinterpretations of psychoanalysis, to Bourdieu and Bernstein's analyses of class, codes and schooling, to Habermas' discussions of "communicative competence." While there are surely significant differences among these theorists, reading them as a single line of thought we are confronted with a vision of ourselves that is jarring and, if we are honest, difficult to accept. We have to shift our self-understanding and readjust our assumptions about the "truth" of what we hold dear and the definition of knowledge that we take for granted. We have to begin to see ourselves as speakers struggling to understand on borrowed words, communicating within powerful and restrictive systems of talk, and often desperately holding on to habits, beliefs and ideologies that we accept as valid, good, and universal, even as their value-laden quality, historical contingency, cultural narrowness, or even distortion grow more and more apparent.

---

[1] See also Jurgens Habermas' review of Gadamer's work (1977).

[2] Two examples of this kind of perspective are offered in Garfinkel (1967), and O'Neill (1974).

What is at stake here is not only Karl Marx's critique of ideology or Max Scheler's most basic question, "What is knowledge?" or Karl Mannheim's articulations of the meanings and expressions of the complex relations between societies and their ideas — all central to the history of the Sociology of Knowledge. What is problematized is our very stance as analysts — as those who claim they can accurately interpret commonsense perceptions or dissect a society's utopian claims. For just as a Sociology of Knowledge demands that social life can be meaningfully reconceptualized as a changing symbolics of the quotidien, so it also alerts us to the fact that the foundations, presuppositions and potencies of our reflexive repertoires — our basic critical vocabularies — must also be questioned.

This is not a simple task. Our sense of ourselves, our tools of talk, our conventions of seeing and being, and our most cherished visions of "excellence" in education or even the *good life* itself are not easily "surrendered," even temporarily.[1] We are skeptical of different discourses, defensive when our own language is scrutinized, and possessive of our critical claims. As Foucault sees it, the "gentle" unobtrusiveness of most intellectual "archaeological" work gives way — in the face of questions regarding our taken-for-granted discursive systems — to confusion and then anger:

> One may uncover with gentle movements the latent configurations of earlier periods; but when it is a matter of determining the system of the discourse on which we are still living, when we have to question the words that are still echoing in our ears, which become confused with those we are trying to formulate, the archaeologist, like the Nietzschean philosopher, is force to take a hammer to it (cited in Spanos, 1984, pp. 204-5).

How we can recognize the limitations and acknowledge the repercussions of our "words" while they are "still echoing in our ears" is the challenge that a Sociology of Knowledge opens before us and that our explorations of education demand.

---

[1] The notion of "surrender" is sensitively developed in the work of sociologist Kurt H. Wolf. See especially Wolff (1977) and (1983).

III. The Language of Modernity

To describe social life as a conversation (as, for example, Michael Oakeshott did) has sometimes led to ahistorical caricatures of social reality. We can too quickly pass over the gaps of understanding, the inequities between speaker and listener, or the power of certain unquestioned discourses to mold social and educational institutions and set limits to our participation within them. More generally, the particularities of the ideational, cultural and socio-economic identities of societies have often been neglected even as the more general sense-making necessities of all cultures have been recognized. It is our dependence not only on the presence of conversation, but on its very textures — that which it names and excludes, that which it accents and silences: its quality — that we must begin to recognize and assess (Wooton, 1975; Misgeld, 1976).

Max Weber, through his myriad writings on the distinctiveness of the Occident, has helped us to see the "rationalization revolution" that most vividly characterizes our language and our age — that of modernity. The intersecting growth of a capitalist market, a hierarchical and bureaucratic state, a rational system of law, an urbanized populace, a secularized faith structure, a technologized economy, and even a rational chordal structure in music has reverberated throughout the "departments of life," and provided us with an encyclopedia of meanings that informs structures and ideals — that permeates our political, economic, educational and personal lives. According to modernity's ordering of the world, the ways of traditional peoples, the centrality of myth and poesis, and the lived-experience of a spiritualized nature must be transcended and then expertly recast by a triumphant humanity guided by the dictates of science and Reason. Weber's pessimistic vision of a "disenchanted" modern universe trapped within its self-made "iron cage" stands in stark contrast to the utopian discourse of individual autonomy, freedom, and rationality that — still today — characterizes the modern mind and provides the vocabulary of legitimation for major social institutions (Weber, 1958).[1]

---

[1] See also "Priests, Prophets Machines, Futures," in Nelson (1982); and Nelson (1969).

It is the promise of unlimited progress and obsession with "futurity" (Berger, 1977; Berger, Berger & Kellner, 1973) that modernity has bequeathed us and that our proclamations about ourselves and even our critical rejoinders depend upon. But very importantly, this passionate attachment to the future has been deeply intertwined with another insistent cultural presupposition: that progress itself is gained through the systematic objectification and mastery of nature. As humans, in effect, become "de-natured," the world around them can be more firmly fixed in space, named, examined, and fully known. Thus, since the 17th Century, modern science (and "thinking" itself that has depended upon this version of science as its model) has been animated by Descartes' images of "molding" and "squeezing" its objects of inquiry, and of seeking the "power to conquer and subdue [nature], to shake her to her foundations" (Francis Bacon cited in Leiss, 1974).[1] It is the uncertainty and anarchy of the unnamed and what is deemed the wild, the incomplete, and the magical that the modern natural and social sciences seeks to contain and to reduce to manipulable terms. How understandable it is that our basic notions of what constitutes knowledge and our ideals of education itself, brought to life through this sieve of calculation, instrumentality and mastery, are so intimately intertwined and dependent upon "the fetishization of detachment" and the worship of technology itself.[2]

The significant point here concerns not only the proliferation of the products of modern technology or our judgments regarding their effects upon our everyday lives. Surely, both are important. Yet, whether we are astonished and feel privileged by technology's revolutionary accomplishments, or express abhorrence in the uncovering of its shadows of damage and distortion, the contours of our daily experiences, the nature of public and corporate decision-making, the structures and strategies of the organizations our lives are molded by, and the terms that guide assumptions about the social "good" are all "mapped" by what Daniel Bell describes as a "trajectory of knowledge" that is *technocratic* at its core. What is thus at stake is not only the quality of our material lives and the broader social ecology of the contemporary world, but our most basic terrain of thought (Bell, 1976).

---

[1] Henryk Skolimowski provides a useful historical overview of this 'mastery'-perspective (1981). The "extraordinary, indeed pathological, disjunction of nature from its manufactured results" is sensitively examined in Bookchin (1982), especially Chapter 11, "The Ambiguities of Freedom." See also Bordo (1987).

[2] John Sallis develops this kind of theme in "Towards the Movement of Reversal: Science, Technology and the Language of Homecoming" (1970). Susan Griffin's *Woman and Nature: The Roaring Inside Her* (1978) is a significant contribution to a growing eco-feminist literature on the repercussions of a cultural obsession with mastery and control. See also Turner (1980) for a provocative history of the European conquest of the "new world."

Herbert Marcuse anticipated the more recent attention to the permeation of society by technocratic codes and "prescribed mechanical norms" when, in 1941, he saw how mesmerized and motivated by the standards of the modern "one dimensional" universe we had already become. From the perspective of most peoples' lives, society, he argued,

> . . . is a rational apparatus, combining utmost expediency with utmost convenience, saving time and energy, removing waste, adapting all means to the end, anticipating consequences, sustaining calculability and security (1978, p. 143).

More recently, it has been the theorizing of Jurgen Habermas, particularly his analysis of technology and science *as ideology* that has been most helpful in showing just how profound such an urge toward "calculability and security" has truly been.[1]

What Habermas has uncovered are the intricate ways in which a logic of scientific-technologic progress, a technocratic consciousness, has come to dictate our very "form" of life. Science and technology have been "fused into a system" that, in itself, is a powerful productive force within modern society. But equally important, and more difficult to discern, the dictates of means-ends rationality (of what Weber would describe as "functional" as distinct from "substantive" rationality) have come to dominate our *moral* lives as well. Thus, many questions — about cultural norms, about the practicalities of social organization and human needs, about the usefulness of ideas, about the goals of eduation, and about the meaning of how we act and what we think — have come to be judged by and solved according to the language of purposive-rational action, according to the taking-for-granted "objective" standards of science and of technology. It is through a linguistic screen of technical rules, strategic plans, cost-benefit analyses, human resource management, block and flow diagrams, quantifiable social indicators and administrative expertise that we work, speak, evaluate, and importantly, learn. As Habermas concludes, our "practical interest" in the "intersubjectivity of mutual understanding," in the "creation of communication without domination" — in the lived realities of a democratic politics — has been radically and distortingly supplanted by a "technocratic interest in the expansion of our power of technical control" (1973, p. 113).[1]

---

[1] Habermas develops these themes in "Science and Technology as 'Ideology'" (1970). See also Claus Mueller (1973).

IV. Technocratic Consciousness, Information and the Computer

Claims that we have attained a new stage of societal development and that we now live in and must accommodate our institutions, particularly our schools, to what has been called a "post-industrial society" (Daniel Bell) or an "information age" (Machlup, Naisbitt and Toffler) have served to legitimate and blind us to the realities and repercussions of this obsession with technical control. While it is indeed true that for some societies and to some degree knowledge has challenged traditional capital as the critical "technology," and service production has outstripped the production of goods, these processes have neither resulted in the "end of ideology" nor in a world freed of inequalities and domination as many of its adherents have argued.

What has been neglected by these theories of social change (and by the many calls for social and educational reforms that have unreflectively reiterated their world-view) are the significant ways in which contemporary societies and social theory itself have been increasingly guided by the highly value-laden discourses of systems analysis, policy science, social forecasting, operations research, and managerial cybernetics. And, too, what has been systematically passed over (especially in the popular forms of this "third wave"/"megatrend" thesis) are the deeper configurations of control resulting from the fact that we have become increasingly infatuated by the volume of information that can be generated (its "mass production" as Naisbitt would have it) and bolstered in our quest for mastery by the new "intellectual technologies" (the post-industrial characterization of knowledge) that can manipulate simulated models of experience and engineer outcomes through intricate information transfers. As David F. Noble has explained:

---

[1] For two other complementary views of the presence and ramifications of distorted communications, see Ferguson (1984), especially Chapter Two, "Social Structure and Bureaucratic Discourse;" and Jeremy Shapiro (1972). James Palermo has examined one link between contemporary educational models and our obsession with technique and control. His 1978 essay examines the ways in which competency-based teacher education "reifies" competency, behaviorizes learning, and "blocks" the possibilities for "emancipatory self understanding."

> In the work of the operations researchers and systems analysts, social analysis, like the analysis of the physical world, consisted in fracturing reality into discrete components, determining the mathematical relationship between them, and reassembling them into a new mathematically constructed whole — a system which now appeared to carry the force of logical necessity and thus would be amenable to formal control (1984, p. 55).[1]

The technicist ideal of a perfect union between order and progress, between knowledge and policy, between governance and politics, and between science and rational control has become the dominant ideology in contemporary societies. It represents a new faith structure that "reconstitute(s) the entire symbolic world as one interlocking, problem-solving system (defined by) the latest technologically relevant language of control . . ." (Stanley, 1978, p. 156).[2]

---

[1] See also Raymond Williams' "Means of Communication as Means of Production" (1980).

[2] Trent Schroyer's review of Daniel Bell's *The Coming of Post Industrial Society* (1974) offers a helpful critique of the "technocratic" urge even within social theory. See also Fischer (forthcoming). I am very thankful for the writings of Frank Fischer and our most meaningful dialogues on the issue of technocracy and for our hours of discussion and writing on the meaning and repercussions of this significant societal thrust.

The most vivid evidence of the institutionalization of this contemporary world-view and of our internalization of its terms of thought has been in regard to "high-tech" and to the computer. Nowhere else has what Theodore Roszak recently described as "the cult of information" become so prominent and so obviously intertwined with the ways in which we think and talk about the present, construct our visions of the future, and evaluate the methods and goals of education in our society (Roszak, 1986).

An accurate recording of the interjections of computer-based systems in our daily lives is nearly impossible. Industries engaged in the collecting, storing, collating and distribution of information by computers now generate almost one half of the gross national product of the United States. Corporations, governments and individuals depend on computerized telecommunications links. Marketing strategies, political campaigns, library research, medical procedures, and our everyday shopping experiences (including the very production of foods) are more and more defined through computer operations. Various surveillance programs (like the government's Taxpayer Compliance Measurement Program, systems generated at the F.B.I.'s National Crime Information Center, and those focused on the production of "automated dossiers" of drunken drivers and political activists) are only possible because of the mass production of "transactional information." Computer numerical control systems, computer integrated manufacturing systems and the introduction of the "automatic factory" and robotics have begun radically to alter the workplace. And, in the last decade, Defense Department and National Security Agency work has been dominated by government and university research programs that enlist computers to direct spy satellites, intercept messages, guide aircraft and atomic weaponry, make ballistics computations, and direct the entire strategic command and control system. Each new application reverberates through our lives — influencing the tools that we use, the ways in which decisions are made, and the power relations that structure our experiences as citizens and workers.[1]

---

[1] There are numerous descriptions and analyses of the proliferation of the computer in our lives. Burnham (1983) offers a compedium of good information as does Noble (1984). Howard (1986) and Rybcznski (1983) offer more popularized versions. See also Schiller (1986), Ford (1986), and Beniger (1986).

Yet such a listing (even in its completeness), and our important efforts to uncover and debate the ethical, socio-economic, and organizational dimensions of a truly revolutionary societal tendency, could also slight a deeper reality. For just as the steam engine, the electric dynamo, the automobile and the airplane were the "reigning emblem(s) of progress" in past epochs, and served as the wellsprings of entire vocabularies of images, desires and interpretations of the world, so the computer has become the mythic center of our cultural terrain. Its personification as an independent agency of thought, our anthropomorphizing its intelligence, our deference to its seeming autonomous and neutral commands, and our growing dependence upon the data that it provides have indeed made us susceptible to what Roszak characterizes as the fever of "technological idolatry."

It is thus significant that texts on the future of computers and on computer capability (with such titles as *The Thinking Machine, Machines Who Think,* "Toward an Intelligence Beyond Man's," *The Thinking Computer: Mind Inside Matter, The Biology of Computer Life,* and "Would an Intelligent Computer Have a Right to Life?") have not only sought to survey optimistically the "unlimited" applications of a new set of human tools, but to announce a new stage in human evolution: to proclaim a new species. Robert Jastrow's description is typical:

> Human evolution is a nearly finished chapter in the history of life.... We can expect that a new species will arise out of man, surpassing his achievements as he has surpassed those of his predecessor, Homo erectus.... *The new kind of intelligent life is more likely to be made of silicon* (cited in Roszak, 1986, p. 143).

From I.G. Good and Christopher Evans' prediction of an Ultra-Intelligent Machine (UIM), to Marvin Minsky's work in his MIT artificial intelligence laboratory, to Feigenbaum and McCorduck's "new computer revolution" of Knowledge Information Processors (KIPs), to Gordon Pask's imaginings of a post-*Homo erectus* "micro man" emerges a fantasy of transcending through technology all of the "impediments" and "contaminations" that have retarded both the perfect streamlining of human activity (of a perfected "scientific management") and the efficiency of nature (of a fully "humanized" natural world). The discovery of yet the next "generation" of computers has become the vehicle for our technocratic consciousness to imagine an ultimate mastery that, however illusive, has remained the modern dream.[1]

V. Computers and Technocratic Norms of Thinking

> By and large we would like to be rescued, all of us, even
> you. But isn't this asking too much from an idea?
>
> Hans Magnus Enzensberger
> *The Sinking of the Titanic*

The modern "idea" is that scientific and technological power can offer humans what Alvin Gouldner described as "the unlimited potency and cosmic unification" that other faith structures once provided. Seemingly freed from the trappings of our "illusions" and "fantasies" — from "infantile" languages of deities and angels, we moderns have adopted (and adapted to) a contemporary Promethean monologue propelled by the belief that there is nothing that cannot be accomplished and assured by the assumption that all can be assimilated to its ideological grammars. What we have in fact claimed is that our "rescue" lies in the dissolution of the boundary between humans and machines, in a perfect human-machine symbiosis: in the triumphant convergence of technology and mind. But, in doing so, we have narrowed mind and reduced its activities to the logic of techniques, to the norms of instrumental reason (Gouldner, 1976, p. 260).[2]

---

[1] See Roszak (1986), especially Chapter Two, "The Data Merchants." See also Wheelis (1971), Chapter Two, "The Dream Mechanism," and Rifkin (1985). Sherry Turkle (1984) provides a clear portrayal of the 'culture' of the computer 'hacker' and the artificial intelligence scientist. "The hacker culture," she writes, "is isolationist. The computer offers hackers a way to build walls between themselves and a world in which they do not feel comfortable. The culture of artificial intelligence is imperialistic. Here too there are walls that create a sense of being in a place apart. But this time the walls are felt as a fortress from which to conquer the world rather than as a protective shield to keep it at a safe distance" (p. 251).

[2] See also Jacques Ellul (1985) and Max Horkheimer (1974), Chapter 1, "Means and Ends."

Many social and educational critics have, in the last number of years, alerted us to the limitations and distortions inherent in a technocratic panacea that has manifested itself in our obsession with computers, particularly in the schools. The areas of concern are quite varied and all significant: the staggering amount of money funneled into the purchase of computer systems (universities alone spent more than $1.3 billion on computers in 1984), the propagandistic and hyperbolic claims about the skill levels that will be demanded of future workers (according to the Bureau of Labor Statistics, by 1990 there will be a greater call for workers in retail food establishements than in all computer-related occupations), the intensification of the integration of universities, corporations and the government (especially the military), the extension of bureaucratic and centralized mechanisms of control wedded to the exigencies of "rational" organization, the de-skilling and disempowering of classroom teachers who must depend on pre-packaged software, and the perpetuation of inequalities as a result of differential access to the technologies and the growing commercialization of information itself. But what is also important and more hesitatntly attended to is how the "language" of many educational computer programs (what Roszak calls "the program within the program") bolsters the technocratic mind-set by shaping and legimating the diminution of our thinking.[1]

Computer programs constitute our most contemporary epistemological reserves. They cultivate an implicit educational philosophy by providing a definition of knowledge and truth, and by structuring a specific quality of thought that we, as users and teachers, come to accept tacitly. Much more than working with a powerful and excitingly adaptable *neutral* technology, our use of the micro-computer socializes us to a particular language community, teaching and reinforcing specific habits of thinking and experiencing the world often to the exclusion of other, more "primitive" modes. While Seymour Papert might be correct in asserting that the computer is ideally "an object to think with," an "instrument for teaching everything," it is the nature of that thinking and teaching that is critical to discern if we are to understand the construction and employment of knowledge in our society (cited in Roszak, 1986, pp. 73-74).[1]

---

[1] Aronowitz and Giroux (1985) develop this theme, and Ira Shor (1986) makes a similar argument in *Culture Wars*, Chapter Four. See also Muniak (1986) and Black and Worthington (1986). Michael Apple has written extensively on the effects of the "new technology" upon teachers and students. His essay "Is the New Technology Part of the Solution or Part of the Problem in Education?" (1987) examines, in some detail, the long-term effects of the growing reliance upon educational software. His important argument makes significant connections between the economic realities of hard- and soft-ware manufacturing and purchasing, the "class-, race-, and gender-based differences in computer use," the "deskilling" of teachers, and the broader cultural repercussions of the "technologized classroom."

The underlying presuppositional grid that informs the computer-logic that we have come so to idealize and trust mirrors and fuels the modern project of calculation, mathematization, and the broader rationalization of experience. Galileo's maxim, "To measure everything measurable and to make what is unmeasurable measurable" can just as easily characterize the impetus behind and the results of our dependence on contemporary computer programs. This logic depends on an abiding belief in "objective" knowledge, on the necessary translation of all insight and understanding into discrete facts and manipulable data, on the production of information, on the absoluteness of truth, on an empiricism that equates knowledge and control — and finally, on the radical separateness of self and world, self and others. Our investigations of any topic become guided by the limited priorities and algorithmic properties of the machine. We internalize a "computer model of thought," frequently neglecting the unsanitized realities which refuse binary rationalization (Roszak, 1986, p. 85).

C.A. Bowers' provocative discussion of the data base *NewsWorks*, for example, shows how this pattern of operational and instrumentalized thinking is subtly taught and reinforced as a student sits in front of a microcomputer manipulating data files. While the student concretely sees how "bits of information" now at his/her command can be collected, stored, and retrieved with extraordinary speed and ease, other properties and constitutive features of knowledge are pushed even further from view:

---

[1] See Neil Postman's analysis of "Media as Epistemology" (1985). Morris Berman's schematic but useful essay (1986) explores the possible connection between "computer consciousness" and "psychosis." See also Bowers (1986). Many of the insights introduced here about computers and their effects upon our notions of communications and literacy are indebted to the on-going and important writings of C.A. Bowers.

> . . . the machine in front of the student cuts out of the communication process . . . tacit-heuristic forms of knowledge that underlie common sense experience, the awareness that knowledge is an interpretation that is influenced by the conceptual categories embedded in the language of the person who discovered or established the knowledge as fact, the recognition that language and thus the foundations of knowledge itself are metaphorical, and finally that data has a history (Bowers, 198, p. 8).

The problem of meaning and interpretation, the struggles with contradictions that cannot be reduced to formal and "procedural" logics, the influence of perspective, and the prevalence of ambiguity are either glossed over or lost altogether as thinking and data processing are experienced as functionally equivalent.[7] Here again, our cultural idealization of the computer and its mode of "thinking" furthers the pernicious technocratization of language and thought and undercuts the very educational ideals that critics already see most absent in our schools today.

Theodore Roszak's sensitivity to this reduction of ideas to information is most pertinent. Our "intellectual priorities," he argues, become "distort[ed]" when "we lose sight of the paramount truth that *the mind thinks with ideas, not with information.*" While we may turn to information to buttress an argument or illustrate a concept, information can neither create ideas nor invalidate them. Information itself is rather one outcome of a human activity whose volatility, conditionality, anticipatory quality — its "artfulness" — always pushes beyond the inherent structure of data. It is thus the "principal task of education to teach people . . .

---

[7] See Dreyfus and Dreyfus (1985), and Dreyfus (1975). See also Brown (1977), Chapters Four and Five on "Metaphor" and "Irony;" Searle (1982); and Roszak's (1986) discussion of LOGO in Chapter Four. This includes a useful discussion of the limitations of the LOGO curriculum's efforts to "embrace art" (i.e., drawing, choreography, and poetry). Roszak quotes from D. Watt's (author of *Learning with LOGO)* response to those who might question the poetry-writing possibilities of this computer program: "When I see a computer can produce a poem, it makes me stop and think just a little . . . . You and I know that the computer was just following a procedure. The procedure tells it to select certain types of words according to a fixed pattern. It selects from several long lists of different types of words: nouns, verbs, adjectives, etc. . . . But wasn't I doing the same thing when I wrote my poem? I was following a procedure, too. The only difference was that I had a much larger choice of patterns and a bigger list of words in my head from which to choose. . . . How is that different from what the computer does?" (pp. 80-81). D. Sloan (1985) also presents a number of essays on the nature of "computerized" thinking, such as J. Davy's "Mindstorms in the Lamplight."

> how to deal with ideas: how to evaluate them, extend them, adapt them to new uses. This can be done with the use of very little information, perhaps none at all. It certainly does not require data processing machinery of any kind. And excess of information may actually crowd out ideas, leaving the mind . . . distracted by sterile, disconnected fact, lost among shapeless heaps of data (Roszak, 1986, p. 85).

And perhaps ironically, it is only by distinguishing between ideas and the information they create that we can ever hope to recognize the dependence of these "heaps of data" upon our own concepts — upon the "ideas" that are themselves grounded by the norms and the language of technocratic reason. As computer scientist Joseph Weizenbawm concludes, it is indisputable "that the computer is a powerful new metaphor for helping us to understand many aspects of the world, but . . . it enslaves the mind that has no other metaphors and few other resources to call on" (Weizenbawm, 1976, p. 277).[1]

VI. To Search for New Metaphors

In his 1960 essay "Eye and Mind," Maurice Merleau-Ponty clearly articulated the damaging technocratic tendency to reduce thinking to operating, to equate human with machine:

> Thinking 'operationally' has become a sort of absolute artificialism, such as we see in the ideology of cybernetics, where human creations are derived from a natural information process, itself conceived on the model of

---

[1] Besides Weizenbawm's chapter, "Against the Imperialism of Instrumental Reason," see Adorno (1978), "Keeping One's Distance."

> human machines. If this kind of thinking were to extend its reign to man and history; if pretending to ignore what we know of them through our own situations, it were to set out to construct man and history on the basis of a few abstract indices . . . then, since man really becomes the ***manipulandum*** he takes himself to be, we enter into a cultural regimen where there is neither truth nor falsity concerning man and history, into a sleep or a nightmare, from which there is no awakening (1964, pp. 160-161).

By imagining ourselves as "information-machines" (Merleau-Ponty) fixed upon the fantasies of disembodied and purely formal and artificial systems of thinking and acting, we *can* be freed from the "mediocrity" of actual lived/concrete situations, and more easily attain the "excellence" that each commission report erected as our contemporary educational shibboleth.[1] But in accepting this ideal (and in patterning our ways of thinking and our social institutions, especially our schools, upon it), we also "construct" a vision of possibilities radically narrowed by the language of technocracy that has come to dominate our lives. Our "cultural regimen" is *not* one that has gone "beyond" truth and falsity, "beyond good and evil," as Nietzsche called for. Rather, it is a society that has accepted a very specific and one-dimensionsal version of the whys (the reasons and principles), the wheretos (the purposes and ends), and the wherefroms (the origins and motives) of knowledge and action.[2]

Given these "grounds," what is most striking about the educational reports of the mid-1980's is *not only* the "conventionality and ordinariness," of their "effort to legitimate a certain range of largely technical competencies to promote what is called the national interest," as two careful critics have recently argued (Shapiro, 1985; Greene, 1984). It is that the cost-benefit, technical, or pietistic language of the reports tacitly reproduces and thus continues to trap us in the deeply held belief that our modernity is indeed the highest and final stage of human growth and awareness.[1] Whether demanding *more* of what we have (more tests, more requirements, more homework, more discipline, more state-of-the-art tools and facilities), or indulging in "act[s] of nostalgia for lost origins" (the stimulus behind Adler's *Paideia Proposal* or other calls to a forgotten modern-liberal "core"), our contemporary thinking about education continues to rely on a belief in a single, continuous path of development of which we are a proud product and that we "must" carry on.[2] How ironic it is that our unreflexive use of this language and the technocratic mind-set it has created "reproduces, extends, and enforces rather than disrupts and diminishes the power of the very dehumanizing agencies of the modern world it ostensibly seeks to humanize" (Spanos, 1982, p. 25). Only rarely are we offered a truly alternative vision.

---

[1] Maxine Greene's fine critical essay (1984) discusses this "one-dimensional excellence" that has become "the magic word" in recent reporting on education. See also Mandell and Fischer, forthcoming.

[2] Dieter Misgeld names and explores these areas of questioning and concern in his perceptive analysis of education (1985).

To make the "postmodern turn," as Richard Palmer calls it, is to seek a "radical re-visioning" of our very being in the world: to explore new metaphors that might help us to see outside of the structures of an "exhausted language" that — even in our regular efforts at "reform" — we continue to rely on (Palmer, 1984, p. 148).[3]

---

[1] Greene (1984) describes these three qualities of commission report language, p. 285. The issue of modernity as "the final stage of awareness" is discussed by Schoenwald (1983), p. 49.

[2] Our allegiance and continual return to the "humanistic episteme" as an "act of nostalgia" is raised and explored by Spanos (1982). Spanos' on-going writings on the "waning authority" of the modern core in education have been an important source to the ideas introduced in this part of the essay.

[3] See also Palmer (1973). The notion of our "exhausted language" of higher education is taken from Spanos (1982), p. 28.

There is no ready vocabulary-of-difference to turn to, although some have sought to go beyond conventional social critique and planning.[1] Yet, in *disclosing* (through our critical reflections) that there are openings not yet filled by the terms of modernity; and in *encouraging* (through our imagining new areas of inquiry and hearing new voices) multiple and emerging discourses — without feeling "forced to take a hammer to [them]" — we might begin to challenge, not reproduce, our growing "enslavement" to the "metaphors" of technology.

---

[1] For a variety of explorations, see Lyotard (1984); Cook and Kirk (1983); and Bordo (1987). C.A. Bowers (1987), in his "Afterword," explores a language of education that begins to respond to the limitations of the modern technocratic discourse described in his essay. Through his examination of the "implications" of contemporary theories of bioregionalism (an ecological vision broadly shared by such writers as Wendell Berry, Gary Snyder, the German "Greens" and, though Bowers does not include them, many eco-feminist theorists as well), Bowers seeks to show how educational theory and practice can find an alternative to the modern/liberal ideals of mastery, individualism, and progress. Central to Bowers' "post-liberal" project is his effort to re-situate humans in an interdependent community where attunement to diversity, scale and place, and a de-centering of the self would replace fantasies of human freedom from nature, individual empowerment and rational control.

REFERENCES

Altbach, Philip G., Gail P. Kelly, and Lois Weis, eds. *Excellence in Education.* Buffalo: Prometheus Books, 1985.

Adorno, Theodor. *Minima Moralia.* London: New Left Books, 1978.

Athanasiou, Tom. "Artificial Intelligence: Cleverly Disguised Politics." *Compulsive Technology.* Ed. T. Solominides and L. Levidow. London: Free Association Books, 1985.

Appel, Karl-Otto. "The A Priori of Communication and the Foundation of the Humanities." *Man and World* 5, 1 (February 1972): 3-37.

Apple, Michael. *Teachers and Texts: A Political Economy of Race and Gender Relations in Education.* Boston: Routledge and Kegan Paul, 1987.

Aronowitz, Stanley, and Henry A.Giroux. *Education Under Siege: The Conservative, Liberal, and Radical Debate Over Schooling.* South Hadley, MA: Begin and Garvey, 1985.

Bell, Daniel. *The Cultural Contradictions of Capitalism.* New York: Basic Books, 1976.

Beniger, James. *The Control Revolution: Technological and Economic Origins of the Information Society.* Cambridge: Harvard University Press, 1986.

Berger, Peter. *Facing Up to Modernity: Excursions in Society, Politics, and Religion.* New York: Basic Books, 1977.

Berger, Peter, Brigitte Berger and Hansfried Kellner. *The Homeless Mind: Modernization and Consciousness.* New York: Random House, 1973.

Berman, Morris. "The Cybernetic Dream of the Twenty-First Century." *Journal of Humanistic Psychology* 26, 2 (Spring 1986): 24-51.

Black, Michael, and Richard Worthington. "The Center for Industrial Innovation at RPI: Critical Reflections on New York's Economic Recovery." *Reindustrializing New York State.* Ed. Morton Schoolman and Alvin Magid. Albany, New York: S.U.N.Y. Press, 1986: 257-280.

Bordo, Susan. *The Flight to Objectivity: Essays on Cartesianism and Culture.* Albany, New York: S.U.N.Y. Press, 1987.

Bookchin, Murray. *The Ecology of Freedom.* Palo Alto: Cheshire Books, 1982.

Bowers, C.A. "Teaching a 19th Century Mode of Thinking Through a Twentieth Century Machine." Unpublished manuscript, 1986.

__________. *Elements of a Post-Liberal Theory of Education.* New York: Teachers College Press, 1987.

Brown, Richard H. *A Poetic for Sociology.* Cambridge: Cambridge University Press, 1977.

Burnham, David. *The Rise of the Computer State.* New York: Random House, 1983.

Cook, A., and G. Kirk. *Greenham Women Everywhere.* Boston: South End Press, 1983.

Davy, J. "Mindstorms in the Lamplight." *The Computer in Education: A Critical Perspective.* Ed. D. Sloan. New York: Teachers College Press, 1985.

Dreyfus, H. *What Computers Can't Do.* New York: Harper and Row, 1973.

Dreyfus, H., and S. Dreyfus. *Mind Over Machines: The Power of Human Intuition and Experience in the Era of the Computer.* New York: The Free Press, 1985.

Education Commission of the States Task Force on Education for Growth. *Action for Excellence.* 1983.

Ellul, Jacques. *The Humiliation of the Word.* Grand Rapids, Mich.: William B. Eerdmans, 1985.

Ferguson, Kathy. *The Feminist Case Against Bureaucracy.* Philadelphia: Temple University Press, 1984.

Fischer, Frank. *Technocracy and the Politics of Expertise: A Critical Perspective.* Sage Publications, forthcoming.

Ford, Daniel. *The Button.* New York: Simon and Schuster, 1986.

Forester, John, ed. *Critical Theory and Public Life.* Cambridge, MA: The M.I.T. Press, 1985.

Gadamer, Hans-Georg. *Truth and Method.* New York: Seabury Press, 1975.

Garfinkel, Harold. *Studies in Ethnomethodology.* Englewood Cliffs: Prentice Hall, 1967.

Gouldner, Alvin W. *The Dialectics of Ideology and Technology.* New York: Seabury Press, 1976.

Greene, Maxine. "'Excellence,' Meanings, and Multiplicity." *Teachers College Record* 86, 2 (Winter 1984): 284-297.

Griffin, Susan. *Woman and Nature: The Roaring Inside Her.* New York: Harper and Row, 1978.

Habermas, Jurgens. *Toward A Rational Society.* Boston: Beacon Press, 1970.

________________. A review of Gadamer's *Truth and Method. Understanding and Social Inquiry.* Ed. Fred R. Dallamayr and Thomas A. McCarthy. Notre Dame, Indiana: University of Notre Dame Press, 1977: 353-363.

Heidegger, Martin. *Poetry, Language, Thought.* New York: Harper and Row, 1971.

Horkheimer, Max. *The Eclipse of Reason.* New York: Seabury Press, 1974.

Howard, Robert. *Brave New Workplace.* New York: Penguin, 1986.

King, Ynestra. "The Ecology of Feminism and the Feminism of Ecology." *Harbinger* 1, 2 (Fall 1983).

____________. "Feminism and the Revolt of Nature." *Heresies* 13 (1981): 12-16.

Leiss, William. *The Domination of Nature.* Boston: Beacon Press, 1974.

Lyotard, Jean-Francois. *The Post-Modern Condition: A Report on Knowledge.* Minneapolis: The University of Minnesota Press, 1984.

Mandell, Alan, and Frank Fischer. "Educational Policy in High Tech America: The Ideologies of Excellence." *Telos,* forthcoming.

Marcuse, Herbert. "Some Social Implications of Modern Technology." *The Essential Frankfurt School Reader.* Ed. Andrew Arato and Eike Gebhardt. New York: Urizen Books, 1978: 138-162.

Merleau-Ponty, Maurice. "Eye and Mind." *The Primacy of Perception.* Ed. J. M. Edie. Evanston, Illinois: Northwestern University Press, 1964: 159-190.

Misgeld, Dieter. "Critical Theory and Hermeneutics: The Debate between Habermas and Gadamer." *On Critical Theory.* Ed. John O'Neill. New York: Seabury Press, 1976: 164-183.

____________. "Education and Cultural Invasion: Critical Social Theory, Education as Instruction, and the Pedagogy of the Oppressed." *Critical Theory and Public Life.* Ed. John Forester. Cambridge, MA: The M.I.T. Press, 1985: 94-105.

Mueller, Claus. *The Politics of Communication: A Study in the Political Sociology of Language, Socialization, and Legitimation.* London: Oxford University Press, 1973.

Muniak, Dennis. "The Implications of University High Technology Research Parks and Centers for Urban Development and State Policy Coordination." Unpublished manuscript, 1986.

National Commission on Excellence in Education. *A Nation at Risk: The Imperative for Educational Reform.* 1983.

Nelson, Benjamin. "Conscience and the Making of Early Modern Cultures: *The Protestant Ethic* Beyond Max Weber." *Social Research* 36 (1969): 4-21.

______________. *On the Roads to Modernity.* Totowa, New Jersey: Rowman, 1982.

Noble, David F. *The Forces of Production: A Social History of Industrial Automation.* New York: Knopf, 1984.

Norton, Theodore Mills. "Linguistics and Political Theory: Notes on the Interconnections among Universal Pragmatics, Generative Grammar, and the Theory of Council Democracy." Presented at the Northeastern Political Science Association Meeting, November 1980.

Oakeshott, Michael. "The Voice of Poetry in the Conversation of Mankind." *Rationalism in Politics and Other Essays.* London: Methuen and Company, 1962.

O'Neill, John. *Making Sense Together: An Introduction to Wild Sociology.* New York: Harper and Row, 1974.

Palermo, James. "Praxis and the Reified Character of Educational Physicalism." *Philosophy and Social Criticism* 5, 3-4, 1978: 367-385.

Palmer, Richard. "Phenomenology as Foundation for a Postmodern Philosophy of Literary Interpretation." *Cultural Hermeneutics* 1, 1, 1973.

______________. "Postmodernity and Hermeneutics." *Boundary 2* 5, 2 (Winter 1977): 363-394.

______________. "Expositions on the Postmodern Turn." *Krisis* 2 (1984): 140-149.

Postman, Neil. *Amusing Ourselves to Death: Public Discourse in the Age of Show Business.* New York: Viking/Penguin, 1985.

Rifkin, Jeremy. *Declaration of a Heretic.* Boston: Routledge and Kegan Paul, 1985.

Roszak, Theodore. *The Cult of Information: The Folklore of Computers and the True Art of Thinking.* New York: Pantheon Books, 1986.

Rybczynski, Witold. *Taming the Tiger: The Struggle to Control Technology.* New York: Penguin, 1983.

Sallis, John. "Towards the Movement of Reversal: Science, Technology and the Language of Homecoming." *Heidegger and the Path of Thinking.* 1970.

Schiller, Herbert I. *Information and the Crisis Economy.* New York: Oxford University Press, 1986.

Schoenwald, Richard L. "What Post-Modernism Means for Colleges." *Liberal Education,* Spring 1983.

Schoolman, Morton, and Alvin Magid, eds. *Reindustrializing New York State.* Albany, New York: S.U.N.Y. Press, 1986.

Schroyer, Trent. Review of Daniel Bell's *The Coming of Post Industrial Society. Telos* 19, 1974: 162-176.

Searle, J.R. "The Myth of the Computer." *The New York Review of Books,* April 29, 1982: 5.

Shapiro, H. Svi. "Capitalism at Risk: The Political Economy of the Educational Reports of 1983." *Educational Theory* 35, 1 (Winter 1985): 57-72.

Shapiro, Jeremy J. "One Dimensionality: The Universal Semiotic of Technological Experience." *Critical Interruptions.* Ed. Paul Breines. New York: Herder and Herder, 1972: 136-186.

Shor, Ira. *Culture Wars: School and Society in the Conservative Restoration: 1969-1984.* Boston: Routledge and Kegan Paul, 1986.

Skolimowski, Henryk. *Eco-Philosophy.* Boston: Marion Boyars, 1981.

Sloan, D., ed. *The Computer in Education: A Critical Perspective.* New York: Teachers College Press, 1985.

Spanos, William. "End of Education: The Harvard Core Curriculum Report and the Pedagogy of Reformation." *Boundary 2* 10, 2 (Winter 1982).

_______________. "Boundary 2 and the Polity of Interest: Humanism, the Center Elsewhere, and Power." *Boundary 2* (Spring/Fall 1984).

Stanley, Manfred. *The Technological Conscience: Survival and Dignity in an Age of Expertise.* New York: Free Press, 1978.

Turkle, Sherry. *The Second Self: Computers and the Human Spirit.* New York: Simon and Schuster, 1984.

Turner, Frederick. *Beyond Geography: The Western Spirit Against the Wilderness.* New Brunswick, New Jersey: Rutgers University Press, 1980.

Weber, Max. *The Protestant Ethic and the Spirit of Capitalism.* New York: Charles Scribner's and Sons, 1958.

Weizenbawm, Joseph. *Computer Power and Human Reason: From Judgment to Calculation.* San Francisco: W.H. Freeman, 1976.

Wellmer, Albrecht. "Communications and Emancipation: Reflections on the Linguistic Turn in Critical Theory." *On Critical Theory.* Ed. John O'Neill. New York: Seabury Press, 1976: 231-263.

Wheelis, Allen. *The End of the Modern Age.* New York: Basic Books, 1971.

Williams, Raymond. "Means of Communications as Means of Production." *Problems in Materialism and Culture.* New York: Schocken, 1980.

Wolff, Kurt H. "Toward Understanding the Radicalness of Surrender." *Sociological Analysis* 38 (1977): 397-401.

_______________. "The Sociology of Knowledge and Surrender-and -Catch." *Beyond the Sociology of Knowledge: An Introduction and a Development.* Lanham, Md.: The University Press of America, 1983: 256-267.

Wooton, Anthony. *Dilemmas of Discourse: Controversies About the Sociological Interpretation of Language.* London: Allen and Unwin, 1975.

***James Hall** is the founding President of Empire State College. With a Ph.D. in American Civilization from the University of Pennsylvania, Dr. Hall has authored and edited numerous publications on nontraditional and adult education, including* Alternative Approaches to Undergraduate Education *with Barbara Kevles.*

James Hall

Afterword

As a major force in conserving and advancing society's knowledge and culture, education has always been a battlefield on which society engages its social tensions, inequities, and individual private and public visions. In the United States, there is a clear public consensus about the importance of education, but the consensus often stops there, while we continue to debate about the what and how of institutional service in our schools, colleges, and universities. For those who would attune higher learning more responsively to a rapidly changing population and social order, there is no supernatural intervention, no talisman or touchstone, to tell us misstep from sure footing.

With this uncertainty as their context, the writers in this volume attempt to bring understanding and interpretation to new institutional shapes and pedagogies in order to describe strategies which move the academic agenda from our present ambivalence to a more promising future. Their strategies have a common theme. While these writers represent a wide range of academic disciplines and personal backgrounds, theirs is a vision shaped by an intention to allow the student to initiate a discourse of learning in which that student remains fully engaged from the outset.

This is no coterie of idealists blinded by the gleam of a particular educational ideology or by success based on a controlled environment or self-selected clientele. These are the reflections of real teachers, aware of their own limitations, experienced in the practical limits of the learning dialogue, humble and realistic about the possibilities and probabilities of any system. By personally implementing alternative educational approaches, they have shaped the ethos of Empire State College through an entire generation. The personal commitment and expertise of these faculty mentors yields a testimony of seasoned commentary and reasoned reflection about the nuances of higher learning, in particular of individualized learning.

Perhaps what makes the affirmation of these writers so useful, so full of insight for readers and researchers who seek more than statistical data about adult learners, is the rich (and at times gritty) texture of working with these students. Above all, these essays convey a first-hand knowledge of educational change, not simply as theory, but as it has occurred in the highly experimental but time-tested environment of Empire State College.

At Empire State College, we think a lot about means and ends. The ends of learning are not substantially different from those at more traditional institutions, but the means can be quite different. They significantly affect the quality of those ends, especially for older students, and often produce, in fact, changed ends as well.

The various means students use at Empire State College are by now proven and established. For students with conflicting schedules and demands on their time, they offer an opportunity to arrange the time and place of study. They include the motivation of an individually planned degree program, with thoughtfully constructed learning contracts and frequent evaluative feedback. They recognize the knowledge already held by students, as well as prior learning gained through experience, both of which can establish high motivation as well as advanced placement credit. The conviction that college-level learning occurs in many ways and places is now better understood, and the methods employed to measure it have been continually refined. These new means may also provide possibly the only practical way for older, working, home-bound, disabled or distant students to pursue a college degree.

The number of students requiring these alternative means continues to increase rapidly. By the year 2000, for instance, the 35 to 64 year old population will have increased to 40% of New York State's population (to 7.4 million). The ethnic, immigrant and minority component of this large group, already by-passed at an earlier age by higher learning, will constitute a steadily higher proportion of the whole. Moreover, the economic need for a skilled workforce will maintain steady pressure on this older population to pursue further advanced study, even while continuing to work full time.

Given the personal and insightful essays in this volume about the background and current practice at Empire State College, it may seem compulsive to suggest that much remains to be done. Yet the reality is that society continues to metamorphose while institutions tend to ossify. The all-too-frequent result is a widening gulf between the organization and the public it serves. Means which are effective at one time with one population may prove less useful for others. The challenge is to respond to new opportunities without becoming rudderless or opportunistic. Empire State College and its faculty have consistently sought to maintain a responsive flexibility firmly grounded in the communities of knowledge of our society.

During the 1980's the nation witnessed fundamental cracks in the foundations of America's existing educational system, fault lines which threaten to slip into earthquake proportions before the end of the century. Increasing numbers of students unable to demonstrate competency in the basic skills, growing numbers of school dropouts and adult functional illiterates, and a population with increasing percentages of educationally and fiscally impoverished members kindled calls for reform of our educational system. As many current critical reports indicate, these cracks are easy to detect, but the extent of their depth into the American infrastructure is as yet unexplored. Most of the prescriptions offered for reforming the educational system, such as masssive infusions of new educational funding, increased measures of student performance, curricular revisions, attempts at assessment and greater public accountability, fail to grasp the depth of the problem. Higher education may be fundamentally changed, and Empire State College, perhaps a bit ahead of the seismologists in sensing the needs, could find that it too is out of touch with changing social requirements.

Within the educational community, many expected that Empire State College's innovations would be adapted generally by the mainstream of higher education. In 1971, when Empire State was created, much of higher learning was in a chaotic condition, encouraging relative openness to new directions. The student profile was changing and has continued to shift markedly to part-time and older students in need of greater flexibility — *structurally*, to permit real access, *academically*, to permit new configurations of content, and *pedagogically*, to permit new modes of teaching and learning. Yet at most institutions, instruction still occurs in the daytime classroom at the foot of a professor. Curricula which have moved beyond the academic major and elective system to offer effective general and interdisciplinary learning are hard to find. And experiential, off-campus learning and credit for prior learning, despite their demonstrated value and utility, are increasingly rejected by faculties retreating to the security of the familiar. Perhaps most unfortunate is the decline of special program initiatives opening access to minority students. The peak of minority enrollments in the late 1970's has passed, and access for by-passed students remains an unfulfilled social need. So despite a seachange in the social and economic conditions of American life, higher learning, seeking stability in the name of quality, has retreated from its earlier commitments.

Response to today's social condition requires vigorous reform activity in at least four areas. The first is to *extend outreach*. Innovative institutions such as Empire State College, and even many of those steeped in tradition, have moved a small proportion of higher learning beyond the classroom in the 1970's and 1980's. Outreach must now be further extended through collaboration or joint ventures with corporate, labor, non-profit and government organizations. Collaboration means not simply offering existing college courses in other locations, but jointly planning programs and services that meet employer and employee expectations as well as the highest academic standards. It can mean complementary use of each partner's staff expertise, a shared interest in on-site evaluation, negotiated tuition reimbursements, and the wide application of alternative instructional means. Collaboration of this character will shift the locus of more higher learning away from the campus to a wider population which has recurrent lifelong learning needs at different times. It will also ensure that older students who must study while they continue to work full time receive education of the highest quality.

The second reform is *serving a pluralistic population*. The national imperative to bring minority citizens into the mainstream requires educational strategies which significantly improve the rate of school and college success: barely 15% of all Blacks and Hispanics who started the first grade are now attending a college, and the rate of graduation of these few is very low. Empire State College, which pioneered in new approaches for access and success for so many students, has a unique opportunity and special obligation to contribute to meeting this national priority. Through the application of already tested means for learning, including close collaboration with community colleges, businesses, and labor unions, individualized academic planning and advisement, recognition of prior learning, and the wise application of technology, Empire State could begin to make a difference. If illiteracy, undereducation, and the unacceptably high college drop-out rate for minority students is to be reversed, alternative educational approaches will be needed. Empire State College can become aggressively active in this quest.

A third priority reform is in the *assessment of prior learning*. The practice of assessing the value of prior learning, including experientially based knowledge, needs to be expanded. Although recently there has been increasing reluctance on the part of some faculties to translate such learning into formal academic credit, the wide non-collegiate experience of large numbers of by-passed older, Hispanic, Black and Asian students will require an increased recognition of their experiential knowledge, especially as a means for motivation and educational goal-setting. As the numbers of traditional school graduates declines, industry, government, and the military will need the skills of increasing numbers of workers who have not completed college degrees. In the years ahead, a growing proportion of these workers will be of minority background. Given the current low college-going rate of these groups, serious recognition of prior learning will be one of the most useful and practical educational strategies to encourage and motivate these by-passed students to gain the necessary advanced education.

A fourth priority area is the *instructional use of technology*. Although today one finds very few examples of successful large-scale application of technology to education, new potential uses for off-campus students, especially those at job sites or distant locations, are emerging. Today's interactive telecommunications technologies not only transmit necessary knowledge and information directly to the student, but also support the kind of teacher/student pedagogy which can foster the development of advanced skills usually associated with traditional campus-based instruction at its best.

In order to bring such costly technology within the capability of individual colleges and universities, the states and federal government will need to provide initial support for satellite, fiber-optic, and other advanced communications systems that can bring high quality instruction at modest cost to both students and educational institutions. Fortunately, many states are now actively developing or planning such systems.[1] With such hardware and system support, higher education can focus its resources and expertise on the creation of academic courses, registration and advisement, and student evaluation — the heretofore missing elements of technology usage. Most critically, technology could be a powerful ally in achieving the priorities of educational collaborations with non-collegiate organizations, and the means to improve outreach to serve by-passed and minority populations. Clearly governments need to make a new investment in educational technology.

---

[1] *State Higher Education Policies in the Information Age*, edited by Mollie A. McGill and Richard W. Jonsen. A Report of the Western Interstate Commission for Higher Education. Boulder, CO, 1987.

If Empire State College is to continue to fulfill its fundamental mission in the changing climate of the years leading to 2000, it must work at the frontier of access and outreach in serving new students. The college can begin by building strong, mutually responsive relationships with organizations outside the academy, bringing its most effective means for student learning and evaluation into the process.

As Empire State College pursues these new goals, there can also be no doubt that the faculty must bring to each of these areas of reform its unique concern and successful approach to human interaction in the teaching/learning endeavor. This approach includes a high faculty appreciation for human differences, adult transitions, and the place of the college experience in enabling individuals to achieve personal goals while meeting high academic standards within the complex and changing world of their individual adult lives.

All of the endless debates in higher education — about the proper elements of an undergraduate education, the shape of the curriculum, the methods or the outcomes of learning, the application of new and exotic technologies — can be rationalized by reference to a central premise of Empire State College. Assumed in all of this volume's essays, this premise holds that as long as the College puts the student at the center of the educational equation and adjusts its assumptions and academic assets to that variable, then institutional ventures into new territories, collaborations, or learning resources and technologies will be apt to succeed. Higher learning is for those who continue to realize their potential by gaining increasing knowledge of things and ideas, who develop the intellectual and personal skills to use knowledge constructively and creatively, and who sculpture the self-understanding necessary to engage one's self to the fullest in the social mainstream of human activity. To these ends Empire State College pledges its people and resources.